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THE EPIDEMIOLOGY OF LOBAR PNEUMONIA

A STUDY OF THE PREVALENCE OF SPECIFIC STRAINS OF PNEUMOCOCCI IN THE NASOPHARYNX OF IMMEDIATE FAMILY CONTACTS

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An attempt was made in this study to clarify certain points in relation to the epidemiology of lobar pneumonia:

1. Is any specific type of pneumococcus more prevalent in the immediate family contacts of a case of lobar pneumonia due to that particular type of pneumococcus than in the population at large?

2. Is there any difference in the epidemiologic behavior of the different types of pneumococci?

3. Do certain specific types of pneumococci that are more or less prevalent in the normal population pass more readily from the sick to the well than from normal person to normal person?

4. Are there any measurable environmental factors, such as overcrowding, economic or social status, or seasonal variations, that may influence the ready transfer of a specific type of pneumococcus from the patient to his immediate contacts?

5. Do variations in the individual, such as the age factor or the existence of an acute infection of the respiratory tract in the family, have any appreciable effect on the distribution of specific types of pneumococci to the family contacts of a case of pneumonia?

In an attempt to determine these points, a study was made of the correlation of the prevalence of the various specific types of pneumococci in the throats of the family contacts with the homologous type of pneumococcus isolated from the sputum in a given case of lobar pneumonia. If one type of pneumococcus is much more prevalent in the nasopharynx of immediate family contacts than in the general population, it might indicate that this specific strain was spread readily through direct contact of the patient with a normal person, and this would be suggestive evidence that the particular strain had epidemiologic significance. If, however, the various specific strains of pneumococci are just as prevalent in the community at large as in the throats of individuals in contact with a case of pneumonia due to homologous strains, it would seem that these strains are spread as readily from normal person to normal person as from the sick to the well and have little or no epidemiologic significance.

The unit in these studies has not been the individual or the community but the family. Family epidemics of lobar pneumonia are not a common phenomenon, but the same is true of several other communicable diseases spread by direct contact. A study of the immediate family contacts of a case of pneumonia would seem to be the logical approach to determine the mode of spread of the pneumococcus in the community.

A number of observations have been made of the prevalence of specific types of pneumococci in the nasopharynx of immediate family contacts of pneumonia patients. Notable among these studies are those of Stillman,[1] Rosenau, Felton and Atwater,[2] and Jacobson.[3] These authors were concerned with the familiar original pneumococcus types of Dochez and Gillespie; namely, specific types I, II and III and the heterogeneous group IV. Recently, Cooper [4] and her co-workers have subdivided the various strains of pneumococci that comprise group IV into a considerable number of specific types. Since a large proportion (from 30 to 40 per cent of all the cases of lobar pneumonia) are caused by pneumococci of group IV, it seemed timely not only to supplement the work of the previous observers in relation to the epidemiology of types I, II and III but also to accumulate data in relation to contacts with cases of pneumonia that are caused by the various types of pneumococci of the heterogeneous group IV.

Only lobar pneumonia was considered in our studies. The diagnosis in each case was made by the clinical picture and by the determination of the type of pneumococcus obtained from the sputum of the patient. The occurrence of the actual cases of pneumonia was reported to us by the various hospitals and private physicians in the city of Boston and environs. The sputum was obtained from each patient and the type determined by standard methods. (The laboratory diagnosis of approved laboratories in the larger hospitals was accepted in some instances.) After the probable causal agent of the case of pneumonia had been determined, the family of that patient was visited and nasopharyngeal cultures were obtained from as many of the immediate family contacts of the patient as possible. Cultures were taken only if there had been contact with the patient during the previous seven days. This interval gives one ample margin, since various authors have shown that a pneumococcus strain, when once estab-

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1. Stillman, E. G.: J. Exper. Med. **24**: 651 (Dec.) 1916.
2. Rosenau, M. J.; Felton, L. D., and Atwater, R. M.: Am. J. Hyg. **6**: 463 (May) 1926.
3. Jacobson, M. A.: J. Prev. Med. **1**: 259 (Jan.) 1927.
4. Cooper, Georgia; Edwards, Marguerite, and Rosenstein, Carolyn: J. Exper. Med. **49**: 461 (March) 1929. Cooper, Georgia; Rosenstein, Carolyn; Walter, Annabel, and Peizer, Lenore, ibid. **55**: 531 (April) 1932.

lished, usually persists in the nasopharynx of the individual for a considerable period.

The nasopharyngeal swab taken from each contact was placed at once in a tube of hormone blood broth, brought to the laboratory as quickly as possible, and given a quick incubation of three hours at 38 C. This blood broth (0.8 cc.) was then injected into the peritoneal cavity of a mouse. At the same time, a hormone blood agar plate was streaked with material from the original blood broth culture. The mouse was killed after twenty-four hours (if it had not already died) and the heart's blood and peritoneal fluid were streaked on hormone blood agar plates. Strains of pneumococci were isolated and identified in the customary manner. The specific type was determined by serum agglutination, the technic being used that was recommended by Cooper,[4] who kindly furnished the specific serums. Serums were available for only types I to XIX inclusive at the time the experiment was begun, but these serums are sufficient for the purpose, since they include the great proportion of types of pneumococci that were encountered.

Some of the strains of pneumococci from the original broth culture were avirulent for the mice, or sometimes death of the mouse occurred from other organisms. In these instances it was necessary to return to the blood agar plate which had been made directly from the throat cultures. Thus, some strains of pneumococci were obtained from the plates when no pneumococci had been obtained from mouse cultures. These strains were isolated and identified in the usual manner. A frequent cross check was made also between the type of strains isolated from the mouse culture and that from the original blood agar cultures. My associates and I determined, as have other workers in this field, that there is an agreement in practically every instance between the strains isolated by the two methods.

CONTROLS

Nasopharyngeal cultures were made of a control group of persons in the same manner as in the group of contacts. The controls were selected as nearly as possible from the same economic and social groups as were the contacts, and the cultures were taken during the same seasons of the year. The control group practically equals the contact group in numbers.

EPIDEMIOLOGIC DATA

The study was continued through a period of twelve months to determine the effect of any seasonal variation. Few cases of lobar pneumonia occurred during the summer months, so that the number of contacts that were obtained during this period is small. Information was obtained from each patient with pneumonia and from his contacts in relation to the general economic status and the living conditions that might produce overcrowding and malnutrition. The history of present or recent attacks of acute diseases of the respiratory tract in the family was obtained, including colds, influenza and bronchitis, as well as a history of any previous attack of pneumonia in the patient or in his family.

The virulence (to a mouse) of each strain of pneumococcus that was isolated from a contact or control person was also determined.

TYPES OF PNEUMOCOCCI ISOLATED FROM ACTUAL CASES OF LOBAR PNEUMONIA

One hundred and seventy-three cases of pnemonia were observed during the twelve months period. Since the primary interest was centered in the contacts of these patients and not in the patients themselves, the information in regard to the patients will be summarized briefly. The data concerning the strains of pneumococci that were isolated from the sputum of these patients are given in table 1.

TABLE 1.—*Specific Types of Pneumococci (According to the Cooper Classification) Isolated from One Hundred and Seventy-Three Cases of Lobar Pneumonia*

Type of Pneumococcus	Number of Patients in Each Group	Deaths
Total	173	29
I	48	8
II	34	9
III	16	3
IV	5	1
V	8	3
VI	3	0
VII	8	0
VIII	12	1
IX	2	0
X	3	0
XI	1	0
XII	..	..
XIII	2	0
XIV	1	0
XV	1	0
XVI	..	..
XVII	3	1
XVIII	7	0
XIX	1	1
Higher types	8	1
Negative	10	1

Table 1 shows that pneumonia due to all types of pneumococci were represented in the series of cases except types XII and XVI. Not one of the groups contains a considerable number except type I and type II. The dispersion is quite striking, for no other group contains more than 5 per cent of the total number except type III (9 per cent) and type VIII (7 per cent).

TABLE 2.—*Mortality Rate of One Hundred and Seventy-Three Cases of Pneumonia*

	Number of Cases	Per Cent of Total Cases	Deaths	Case Mortality Rate, per Cent
Type I	48	28	8	16.7
Type II	34	20	9	26.4
Type III	16	9	3	18.7
All other types	75	43	9	12.0

The data of table 1 have been summarized into the four conventional groups of pneumococci (table 2) and it was found that the percentage distribution of the pneumonia due to the various groups is similar to that found by other workers in this field. A somewhat higher proportion fall in group IV, but this is probably due to the fact that the cases were not limited to hospital admissions but taken from the general practice of physicians as well. The case mortality rate of pneumonia due to type I is much lower than one would expect, but this is due to the fact that many of these patients were given type I pneumococcus serum early

TABLE 3.—*Age Distribution in the Cases of Pneumonia*

	Birth to 19 Years		20 to 39 Years		40 to 60+ Years	
	Cases	Deaths	Cases	Deaths	Cases	Deaths
Type I	13	1	18	2	17	5
Type II	9	0	18	1	17	8
Type III	2	0	6	0	8	3
All other groups	28	3	27	3	20	3

in their illness. This study has been reported by Heffron.[5] The low fatality rate in type III pneumonia cases is probably due to the fact that most of these patients were in the lower age groups, for, as Blake [6] has shown, type III pneumococcus spares the young but is particularly fatal to the aged. The distribution of the cases of pneumonia by age groups is shown in table 3.

When the pneumonia cases are subdivided further into ten-year age periods, one finds an almost equal distribution of the cases in each group—with from twenty to thirty-five cases in each ten-year age period (except the group of 60 years and over, eleven cases). In general, the mortality rate increased with age; the lowest mortality rate was in the group of 20-29 years inclusive, 4.2 per cent, and the highest mortality rate in persons over 50 years, 45 per cent. Pneumonia due to types I, II and III strains of pneumococci were distributed throughout all age groups. None of the specific strains that comprise group IV had any predilection for one age group but were also widely distributed. Type III was extraordinary in that, of twelve patients under 55 years of age who developed the disease, none died; whereas, of four persons over 55 years of age who had type III pneumonia, three died.

So far as these data go, there is no evidence that poor economic status or overcrowded living conditions played any definite part in either the incidence or the mortality from lobar pneumonia.

Seasonal influences, however, played a definite rôle in the incidence of the cases of pneumonia. Each case was allocated according to the date of onset of first symptoms.

The seasonal distribution of the cases was as follows:

Summer: July 1 to September 30, 12 cases.
Autumn: October 1 to December 31, 36 cases.
Winter: January 1 to March 31, 64 cases.
Spring: April 1 to June 30, 59 cases.

No single type of pneumococcus was prevalent in one month only or in one season only, but rather there occurred a general distribution of the various types throughout the seasons.

THE PREVALENCE OF PNEUMOCOCCI IN THE NASOPHARYNX OF INDIVIDUALS IN IMMEDIATE CONTACT WITH CASES OF LOBAR PNEUMONIA

A total of 582 persons who had been in recent intimate familial contact with cases of lobar pneumonia were studied. This represents an average of over three contacts per patient. In addition, nasopharyngeal cultures were made on 493 controls taken from the population at large. As far as possible, a representative distribution throughout the various seasons was obtained. The prevalence of pneumococci of all types in contacts and controls is given in table 4.

TABLE 4.—*Prevalence of All Types of Pneumococci*

	Contacts	Controls
Persons in whom pneumococci were found in nasopharynx	347	212
Persons in whom no pneumococci were found in nasopharynx	235	281
Total	582	493
Per cent positive	59.6	43

Seasonal influences played a definite rôle in the distribution of the pneumococci in both controls and contacts.

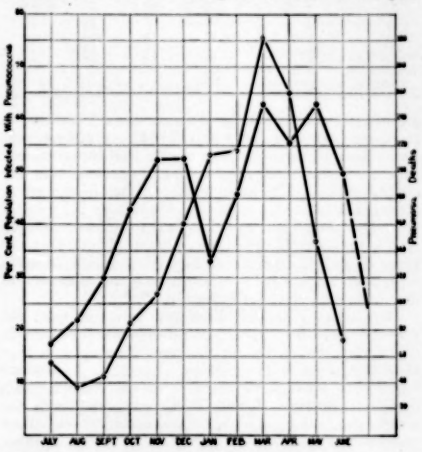
In table 5 is given the proportion of contacts and of controls that harbored pneumococci in the nasopharynx during the various seasons of the year. The striking features of this table are that:

TABLE 5.—*Distribution of Pneumococci During the Four Seasons of the Year*

	Summer		Autumn		Winter		Spring	
	No. of Persons	Per Cent Positive	No. of Persons	Per Cent Positive	No. of Persons	Per Cent Positive	No. of Persons	Per Cent Positive
Contacts	22	36	130	57	218	56	212	67
Controls	53	15	62	48	184	48	194	45

1. The controls show a consistently lower percentage of positive cultures throughout the seasons.

2. Pneumococci are much less prevalent in both groups in the summer months than during the remainder of the year.



Seasonal variation of pneumococci in pneumococcus carriers (indicated by black dot) compared with pneumonia deaths (indicated by white dot) in Massachusetts in 1931-1932.

The percentage of positive cultures during each month for the combined groups of contacts and controls has been calculated in the accompanying chart. There is justification for combining the two groups, as subsequent discussion will bring out. This chart of monthly incidence shows a low incidence of pneumococci in the summer and a rapid increase in the early fall, followed by an apparent decline, with a second peak in the early spring. This is strikingly similar to the curve of incidence of acute diseases of the respiratory tract in the United States that has been demonstrated by Townsend and Sydenstricker [7] and others.

PREVALENCE OF SPECIFIC TYPES OF PNEUMOCOCCI

A summary of the results, which indicate the prevalence of the various types of pneumoocci that were isolated from contacts and from controls, is given in

5. Heffron, Roderick: New England J. Med. **207**: 153 (July 28) 1932.
6. Blake, F. G.: Ann. Int. Med. **5**: 673 (Dec.) 1931.
7. Townsend, J. G., and Sydenstricker, Edgar: Pub. Health Rep. **42**: 99 (Jan. 14) 1927.

table 6. For the purpose of comparison, the distribution of the types of pneumococci that actually produced lobar pneumonia is inserted in the table.

Several illuminating facts are brought out by table 6. There occurs a very general distribution of all types of pneumococci in both the contact and the control group. Type III is far the most prevalent, but there is no significant difference in its prevalence in the two

TABLE 6.—*Distribution of Pneumococci in Cases of Pneumonia, in Family Contacts and in a Control Group*

Type of Pneumococcus	Cases	Contacts	Controls	Cases, per Cent	Contacts, per Cent	Controls, per Cent
I	48	11	1	27.7	3.2	0.5
II	34	18	3	19.6	5.2	1.4
III	16	87	67	9.2	25.1	31.0
IV	5	4	2	2.8	1.2	1.0
V	8	8	2	4.6	2.3	1.0
VI	3	42	21	1.7	12.1	9.9
VII	8	10	5	4.6	2.9	2.3
VIII	12	7	3	6.9	2.1	1.4
IX	2	8	7	1.1	2.3	3.3
X	3	11	9	1.7	3.2	4.2
XI	1	8	4	0.5	2.3	1.9
XII	0	3	2	0.0	0.9	1.0
XIII	2	10	6	1.1	2.9	2.8
XIV	1	11	5	0.5	3.2	2.3
XV	1	6	10	0.5	1.7	4.6
XVI	0	0	2	0.0	0.0	1.0
XVII	2	16	7	1.7	4.6	3.3
XVIII	7	52	24	4.0	15.0	11.0
XIX	1	5	2	0.5	1.6	1.0
Higher types	8	30	20	4.6	8.6	9.4
Negative	10	235	212			
Total	173	582	496			

groups (25 per cent in the contacts and 33 per cent in the controls). Types VI and XVIII are quite prevalent—from 10 to 15 per cent of the total in the contact group. These strains were equally prevalent in the control group. The most striking thing in the whole table is that all types from type III to type XIX inclusive show an almost exactly equal prevalence of each type in the controls and in the contacts. If one excludes types I and II, therefore, this table would seem to represent the normal distribution of pneumococci in the community during the year of 1932.

Only types I and II show any variation from the general rule. Type I is six times more prevalent in the contact group than in the control group, and type II is three times more prevalent. The great discrepancy that exists between the number of the contact group that harbors types I and II as compared with the control group is brought out if one considers only those persons that had positive cultures. In table 7 is tabulated the distribution of pneumococcus types among those actually infected; e. g., 347 infected contacts and 212 infected controls.

TABLE 7.—*Percentage of Infection with Pneumococci Among Three Hundred and Forty-Seven Infected Contacts and Two Hundred and Twelve Infected Controls*

Type of Pneumococci	Contacts		Controls	
	No. of Persons	Per Cent Infected	No. of Persons	Per Cent
Type I	11	3.1	1	0.4
Type II	18	5.2	3	1.4
Type III	87	25.0	67	31.6
All other types	231	66.5	141	66.4
Total	347		212	

These summaries (tables 5, 6 and 7) indicate that a group of persons in direct contact with cases of pneumonia harbor types I and II pneumococci more frequently than does the population at large. All other types of pneumococci are about as prevalent in the general community as in the control groups.

SEASONAL DISTRIBUTION OF VARIOUS TYPES OF PNEUMONIA

No conclusions can be drawn in regard to the seasonal distribution of each of the various types of pneumococci, since the numbers of some of the types are small. As I have already noted, the general trend of all types was a low incidence during the summer, with a sudden increase in October, followed by a slow decline until about February 1; then, a rapid increase, with the greatest prevalence in March, April and May and a rapid decline in late June. This seasonal variation occurred in both the contacts and the control groups. This general seasonal distribution also occurred in individual specific types wherever the number was sufficiently large to be significant. For example, types III, VI and XVIII were found throughout the year but were much more prevalent in the spring months. No one type was limited to one season; no strain appeared suddenly in the community and then disappeared, nor was there a significant difference in seasonal variation of specific types in the control and contact groups.

CORRELATION BETWEEN EXPOSURE TO PNEUMONIA DUE TO A SPECIFIC TYPE OF PNEUMOCOCCUS AND THE PREVALENCE OF THE HOMOLOGOUS STRAIN IN CONTACTS

A summary of the observations from the whole group of contacts is, of course, not so significant as a more specific analysis of the correlation between direct expo-

TABLE 8.—*The Correlation Between Exposure to a Case of Pneumonia Due to a Specific Type of Pneumococcus and the Prevalence of the Homologous Type of Pneumococcus in the Nasopharynx of Contacts*

Type of Pneumonia	Total Persons Exposed	Correlated with Same Type	Per Cent of Correlation	Distribution of Pneumococci in the General Population	
				No. of Persons	Per Cent
I	186	10	5.4	1	0.2
II	126	14	11.1	3	0.7
III	61	13	21.3	67	13.6
V	22	3	13.6	2	0.4
VI	6	1	16.7	21	4.3
VII	31	1	3.2	5	1.0
VIII	31	7	20.1	3	0.6
IX	15	4	31.0	7	1.4
XIV	2	1	50.0	5	1.0
XVIII	23	4	17.4	34	6.9
All others	81	0	....	345	
Total	594			496	

sure to a patient with a given type of pneumococcus and the prevalence of the same type of pneumococcus in that patient's contacts. This analysis would tell just what proportion of individuals that have been directly and recently exposed to type I pneumonia harbor this specific strain in the nasopharynx. The results of an analysis of such correlations is given in table 8.

The percentage of correlation has been tabulated for each type of pneumococcus, and the distribution of that type in the control population has been given. Thus, of 186 persons who were in direct contact with cases of pneumonia due to type I pneumococci, 10 harbored type I pneumococci, or 5.4 per cent, whereas only 0.2 per cent of the control group harbored this strain.

In analyzing table 8, it was noted that the contacts with cases of pneumonia due to pneumococci types VI, IX and XIV were so few in number that no conclusions could be drawn from the data. The prevalence of homologous strains of pneumococci in contacts with

cases of pneumonia due to types VII, XVIII and possibly also type III is not significantly greater than the general prevalence of these strains in the population at large.

The data for two types of pneumococci in this table are significant; namely, types I and II.

Type II was more than ten times more prevalent in contacts with type II pneumonia than in the population at large, and type I was twenty times more prevalent in persons exposed to this strain. A high correlation is noted also with types V and VIII, but the numbers of persons observed is much smaller than in the first two types. Though type I, type II and type III contacts are the only ones that occur in sufficient numbers to give significant data, it may be noted that there is some significance in the fact that all types in which any correlation occurred showed a higher prevalence of that type in the contacts than in the population at large.

ECONOMIC STATUS

Our criteria for measuring economic status are admittedly faulty. We have made a rough classification of the data into three economic groups: poor, fair and good. A detailed analysis of these data showed no significant distribution of any single type of pneumococcus in any single economic group but rather a strikingly even distribution of all types of pneumococci through all groups.

An analysis of the correlation tables gave no evidence of a greater tendency for a person who has poor living conditions and who develops pneumonia to infect his contacts than those who live in a more fortunate economic situation.

OVERCROWDING

The same is true of overcrowding. Again the criteria are obviously at fault. So far as these data go, however, there was no evidence that an individual living under "overcrowded conditions" is more likely to harbor pneumococci than are other persons. Furthermore, contacts with a case of pneumonia in a family in which living conditions were "overcrowded" were not more likely to harbor the specific strain which had produced the pneumonia in a person of that family than were contacts who were exposed to that particular strain under more normal living conditions.

There were exceptions to this rule, notably with type V and type III, which will be reported in detail in subsequent studies.

THE RELATIONSHIP OF ACUTE RESPIRATORY INFECTIONS IN CONTACTS WITH CASES OF PNEUMONIA TO PREVALENCE OF PNEUMOCOCCI IN THE NASOPHARYNX

It has often been suggested that when an epidemic of colds affects a family, pneumococci become established in the nasopharynx in large numbers as secondary invaders. The development of pneumonia represents simply an extension of pneumococcic infection from the upper to the lower respiratory tract. Certainly, it is not an uncommon experience for a whole family to be affected by an epidemic of colds, followed by development of pneumonia in one member of the family only.

If the epidemiologic chain of events just outlined is the usual occurrence, one would anticipate that immediate contacts of a case of pneumonia in which the family had recently been affected by an epidemic of colds would tend to show a high prevalence of the specific homologous types of pneumococcus in those contacts who had had recent colds.

An analysis of these data shows that pneumococci were no more prevalent in the contacts suffering with colds than in the population at large (table 9).

The data in table 9 indicate that the pneumococci, considered as a group of organisms, do not play an important rôle in the incidence of colds.

If one studies those specific types of pneumococcus in which a correlation occurred between the presence of the type in a case of pneumonia and the prevalence of the identical strain in contacts of that case, a different picture is revealed.

TABLE 9.—*Prevalence of Pneumococci in Pneumonia Contacts Who Had Recently Had Colds*

	Cold at Present		Recent Cold (Within 4 Weeks)		No Colds	
	No. of Persons	Per Cent Positive	No. of Persons	Per Cent Positive	No. of Persons	Per Cent Positive
Contacts	104	50	51	64	423	60
Controls	79	51	60	48	350	40

The number of contacts who had a cold and who harbored the same strain of pneumococcus as was found in the corresponding case of pneumonia is small, but the data are significant.

Table 10 shows that nearly half of the contacts who harbored the same type of pneumococcus that was found in the case of pneumonia from their family had an "acute" cold. I have already noted that these correlations are limited to a small proportion of the strains of pneumonia (table 8). The data are too few to warrant any conclusion but suggest further study concerning the epidemiologic chain of events relating to the part played by the pneumococcus in the acute colds with subsequent pneumonia, and particularly to those cases of pneumonia which may be produced by pneumococcus strains I, II and III.

TABLE 10.—*Correlation of a Specific Strain of Pneumococcus in "Contacts with Colds" with the Same Strain of Pneumococcus Isolated from the Pneumonia Patient*

Types of Pneumococci	Number of Correlations in Contacts with a Cold	Number of Correlations in Contacts Without a Cold
I	3	7
II	4	8
III	9	4
V	2	3
VI	0	1
VII	0	1
VIII	3	4
IX	2	2
XIV	0	1
XVIII	0	4
Higher types	1	1
Total	24	36

Per cent showing correlation: 40.

SUMMARY

The prevalence of various specific types of pneumococci has been determined in 582 family contacts of actual cases of lobar pneumonia and also in 493 controls. Cooper's classification of specific types of pneumococci —up to type XX—was used. Lobar pneumonia due to practically every type of pneumococcus was included in the series of 173 cases, though some of the higher types were infrequent.

The study was carried on through the four seasons of the year. We considered some of the environmental and other factors which may have an influence on contact infection, such as poor economic status of the family with accompanying overcrowded living conditions, seasonal variation, the age factor and the occurrence of acute colds in the family.

All the various types of pneumococci (excluding types I and II) were as prevalent in the general population as in the pneumonia contact group. Types III, VI and XVIII were encountered most frequently.

Types I and II, though responsible for more than half the cases of lobar pneumonia, were rarely encountered in the general population; but type II was three times more prevalent and type I six times more prevalent in the contact group than in the control group. This observation is in accord with the observations of other workers in this field.

Correlation tables of the prevalence of the specific homologous types of pneumococci in a case of lobar pneumonia and its family contacts indicate that the only strains that had a definite epidemiologic significance were types I and II. A fairly high correlation occurred with types V and VIII, but the numbers of persons exposed were small—thirty-two persons to type V and thirty-one persons to type VIII pneumonia.

A seasonal variation was observed in the prevalence of pneumococci in the nasopharynx of both contact and control groups; the highest incidence was noted in the early spring and the lowest during the late summer. This seasonal variation was not a peculiarity of any one type of pneumococcus.

There is no evidence from these data that poor economic conditions, with resultant overcrowding, influenced the distribution of pneumococci. Furthermore, the various specific strains were widely distributed through the various age groups.

Our evidence indicates that contacts having colds at the time of contact with a case of pneumonia did not harbor pneumococci more frequently than contacts with no colds. In some instances, however, an epidemic of acute colds in the family did seem to be a factor in the high prevalence of types I and II in contacts.

One question in relation to the epidemiology of type I and type II has not been answered by these studies; namely: Does a patient with lobar pneumonia due to type I or type II actually infect his family contacts, or do these strains invade several members of a family —possibly following or coincident with a family epidemic of colds—with subsequent development of lobar pneumonia in one member of that family?

Either alternative might explain the relatively high prevalence of type I and type II pneumococci in family contacts of a case of pneumonia due to these types.

In an attempt to determine this point, we are conducting an intensive study of the families in which cases of type I and type II pneumonia occur.

CONCLUSIONS

1. In a study of over a thousand persons, type I and type II pneumococci were found to be much more prevalent in the nasopharynx in immediate family contacts of cases of lobar pneumonia due to the homologous type than in the population at large.

2. The higher types of pneumococci—types III to XIX, inclusive—were just as prevalent in the throat in the general population as in the family contacts of cases of pneumonia due to these specific types. The types most frequently encountered were III, VI and XVIII.

3. The whole group of pneumococci was less prevalent in the late summer months than in the winter and early spring. No one type of pneumococcus showed any deviation from the general rule in seasonal distribution.

4. Poor economic conditions, with resultant overcrowding, did not, per se, increase the prevalence of any one specific type of pneumococci in contacts of pneumonia due to the homologous type.

5. The studies suggest that epidemics of family colds have some relationship to the prevalence of homologous types of pneumococci in contacts of lobar pneumonia due to type I and type II.

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TWO YEARS' STUDY OF LOBAR PNEUMONIA IN MASSACHUSETTS

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BOSTON

Lobar pneumonia as a cause of death outranks all other infections, except tuberculosis. Standing in seventh or eighth place among the principal causes of death, it ranks second if one considers only persons in early adult life. In the United States Registration Area for the ten years 1920-1929 there were over one million deaths from all forms of pneumonia, 52 per cent of which were due to lobar pneumonia. Few if any diseases exact such a toll at the economic prime of life. It is therefore extremely fitting that in any consideration of public health some attention should be given to this disease. Yet almost without exception it has been completely neglected save for a passing remark of regret as to the futility of its control.

Quarantine seems to offer little hope of success, owing to the relative infrequency of secondary cases. A thoughtful health officer would hesitate to recommend the extension of such a procedure, which, as can be demonstrated for other diseases, has little more merit than the respect which properly comes with age. Control through immunization as that against diphtheria or smallpox is more logical, yet unfortunately it has not as yet been found practical or effective in dealing wtih lobar pneumonia. Future research should brighten this otherwise somewhat dark horizon.

There remains, then, but one method that offers any promise of success; namely, an attempt to lessen the toll of life taken by this as yet unpreventable disease. It has long been recognized as a proper function of public health that the governmental agency should offer to the public through the family physician certain special aids in the diagnosis and treatment of communicable disease. The bacteriologic laboratory aids the practitioner in arriving at a correct diagnosis; serums and vaccines produced and distributed by the city or state assist him in certain specific treatments or prophylaxes. It is therefore consistent that in a properly balanced public health program some attention should be given to the aid that can be extended the

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practitioner in the diagnosis and treatment of lobar pneumonia.

The diagnostic aid, viz., typing of sputum, serves the useful purpose of guiding treatment, whether it is general medical or specific serum therapy, and has added much to epidemiologic knowledge concerning the pneumonias. Serums for type I and type II pneumococcus pneumonia have been available for some years but were not extensively utilized, owing to their relatively low potency. In 1924, Felton [1] evolved a method of concentrating these serums so that large doses of immune bodies might be administered in small volumes. This development opened a new field whereby the public health agency might aid the practitioner. In 1928 the Massachusetts Department of Public Health began to produce this concentrated type I and II antibody solution and distributed it for purposes of investigation to a few selected hospitals. When, in 1930, we took account of stock and attempted to determine whether or not the continued production and distribution of this serum was warranted, there was little or no uniformity of opinion as to the serum except that these hospitals which had used it viewed with dismay its withdrawal. Yet its withdrawal seemed almost inevitable, owing to the high cost of its production and the limited extent to which it had reached the patients most in need of it.

In the meantime, Cecil and Sutliff,[2] Cecil and Plummer,[3] Park, Bullowa and Rosenbluth [4] and others had shown beyond reasonable doubt that treatment of type I pneumonia with this serum reduced the mortality approximately 50 per cent, especially if such treatment was instituted within the first four days of the disease. After that time, results were not nearly so marked. The few results that we had available indicated that the serum which the department was producing was of similar potency. One criticism of the work up to that time remained unanswered. This work had chiefly been carried on in a few large, well staffed and well equipped metropolitan hospitals and had been under the immediate supervision of clinicians who had more or less specialized in this disease. Could similar results be obtained with the use of the serum in smaller and less well equipped hospitals or, even more important, in the hands of the general practitioner of medicine? If a governmental agency was to continue to supply this serum free of charge, it should be made available for the treatment of the bulk of patients who might benefit from its use. Such patients were to be found not so much in a few large metropolitan hospitals (where they usually arrived too late to have the serum be of much use) as in the smaller hospitals and the home practice of the family physicians. Furthermore, more economical methods of serum production were desirable.

It was in an effort to find an answer to these problems that a study of lobar pneumonia in Massachusetts was undertaken early in 1931 by the state department of public health.[5] The expenses of this study have been defrayed by the Commonwealth Fund of New York City, since the questions to be answered had a bearing in all parts of the country, particularly in rural practice. Since the costs have been carried by a private foundation, it has been possible for us in the development of the study to carry on a certain arbitrary selection, which would have been questionable if the taxpayers' money had been spent. In the conduct of the study we have had the aid of an advisory committee [6] composed of physicians of special experience in the problems to be met. The study has been conducted under three headings, only one of which, the clinical, can be discussed here. The other parts, the epidemiologic and the statistical, under the joint direction of Dr. Wilson G. Smillie of the Harvard School of Public Health and the department staff, and the laboratory study, under the direction of Dr. Benjamin White of the State Biological Laboratories, are being reported on elsewhere. Suffice it to say here that they may shed considerable new light on previous ideas as to the modes of spread of lobar pneumonia and may aid in the production of a better and more uniformly potent serum.

The clinical trial of the serum is being made by a group of collaborating physicians selected by the advisory committee. These were picked from certain areas each centering around a hospital, the areas in turn being so selected as to give representative samples of the state. There are at present fifteen areas with a total of sixty-three collaborating physicians. While some of these physicians had had special experience with lobar pneumonia, the majority had had no more experience than came from an extensive home and hospital practice. The observations, then, represent the results that might be expected at the hands of any group of intelligent physicians who have taken the pains to acquire a working knowledge of pneumococcus pneumonia serum therapy, which was provided through a one day course on pneumonia offered by the Harvard School of Post-Graduate Medical Education. This course was open to all physicians and has since been repeated twice.

The areas have been built around hospitals in order to provide laboratory service for the typing of pneumonia sputums. The technicians of these hospitals have received one week's training in sputum typing at the Boston City Hospital or in the State Bacteriological Laboratory to make them reasonably proficient in the various methods used and, above, all, to assure uniform results. In order to obtain a check on the latter, cultures of all group IV pneumococci found by these hospital laboratories (which have facilities for only types I, II and III detection) have been forwarded to the state laboratory, where they are typed to thirty-two types, thanks to the courtesy of Miss Cooper of Dr. Park's laboratory, who has furnished diagnostic serums for these higher types. A preliminary report of our experiences with typing has already been published.[7] These results have convinced us that the typing of sputum in the hospital laboratories has been remarkably uniform and accurate, indicating that this is a procedure which can be undertaken in any reasonably equipped hospital laboratory employing a reasonably well trained and intelligent technician. The Krum-

1. Felton, L. D.: A Study of the Isolation and Concentration of the Specific Antibodies of Antipneumococcic Sera, Boston M. & S. J. **190**: 819 (May 15) 1924.
2. Cecil, R. L., and Sutliff, W. D.: The Treatment of Lobar Pneumonia with Concentrated Antipneumococcus Serum, J. A. M. A. **91**: 2035 (Dec. 29) 1928.
3. Cecil, R. L., and Plummer, Norman: Pneumococcus Type I Pneumonia: A Study of 1,161 Cases, with Especial Reference to Specific Therapy, J. A. M. A. **95**: 1548 (Nov. 22) 1930.
4. Park, W. H.; Bullowa, J. G. M., and Rosenbluth, M. B.: The Treatment of Lobar Pneumonia with Refined Specific Antibacterial Serum, J. A. M. A. **91**: 1503 (Nov. 17) 1928.
5. Bigelow, G. H.: The Serum Treatment of Pneumonia, New England J. Med. **205**: 242 (July 30) 1931.
6. The advisory committee consisted of Drs. E. S. Calderwood, Arthur Cushing, R. I. Lee, E. A. Locke, F. T. Lord, R. N. Nye, A. E. Parkhurst, Joseph Pratt, M. J. Rosenau and W. G. Smillie.
7. Heffron, Roderick, and Varley, Florence, M. A.: A Study of Lobar Pneumonia in Massachusetts: Methods and Results of Pneumococcus Type Determination, 1931-1932, Am. J. Pub. Health **22**: 1230 (Dec.) 1932.

wiede, Sabin and tube agglutination methods of typing have been used, with particular emphasis on the Sabin. In the state laboratory we have recently used, with considerable success and often with great saving of time, the Neufeld method of typing.[8]

Bivalent type I and II antipneumococcus serum, concentrated by Felton's methods, has been supplied to the collaborators for use in their home and hospital patients. It has been further provided that any of these collaborators would see a suspected case of lobar pneumonia with any physician in their area who might wish this serum for a patient. The cost of such consultations has been carried by the Commonwealth Fund if the patient was unable to afford the usual fee. A detailed report of all cases treated has been obtained from the collaborator.

In order to avoid delay in the administration of serum in early cases of lobar pneumonia, it has been advised that treatment be begun as soon as the clinical

TABLE 1.—*Serum Treated Cases*

Year	Number of Cases
1931	102
1932	228
1933 (to May 15)	91
Total	421

diagnosis could be made but that in no instance should serum treatment be instituted after the fourth day of the disease. The serum, all given intravenously, was administered in doses of 5, 25 and 45 cc. at intervals of two hours. Any further serum therapy has been conditioned by the results of type determination. If a type I or II pneumococcus was found, further serum might be given according to clinical indications. If any other type was found, further serum was withheld. However, since over half of all lobar pneumonias in young adults are due to either the type I or the type II pneumococcus, this treatment without preliminary typ-

TABLE 2.—*Types of Serum Treated Cases*

Type	Number
I	218
II	51
III	21
Group IV	95
Streptococcic and miscellaneous	36
Total	421
Total deaths, 79; crude fatality rate 18.7 per cent	

ing has seemed justifiable to save time. In certain instances when the collaborator was called in consultation the administration of the serum has been left to the attending physician. Sensitivity to serum as detected by the ophthalmic test has been determined in every instance. A positive test or a history of asthma, hay fever, eczema, urticaria, angioneurotic edema or hypersensitiveness to horse serum or dander has been considered a contraindication for serum therapy.

To date, 421 cases of lobar pneumonia have been treated by sixty-three collaborators, as shown in tables 1 and 2.

A group of 349 cases of pneumococcus lobar pneumonia typed at the state laboratory but not treated with serum has been collected. This group has been obtained in part by following up sputums sent to the laboratory for typing and in part by follow-up by the state district health officers of many cases of home and hospital treated lobar pneumonia within their several districts. The case fatality rate in this series may be seen in table 3, where it will be noted that home treated cases had a lower rate than hospital cases.

TABLE 3.—*Typed Cases of Pneumococcus Lobar Pneumonia (Due to All Types of Pneumococci) Not Serum Treated*

	Total	Fatal Cases	Case Fatality Rate, per Cent
Hospital cases	206	47	22.8
Home cases	143	24	16.7
Total	349	71	20.3

Among the 349 untreated cases were 85 due to pneumococcus type I (about half were home and half were hospital cases). Of these, 22 patients died, giving a case fatality rate of 25.9 per cent. This control group is still small but it does afford some standard with which the treated cases may be compared.

In table 4 are shown the results of serum therapy in pneumococcus type I lobar pneumonia. We have included as treated cases only those patients who received more than 15 cc. of serum and in whom such treatment was begun sometime during the first four

TABLE 4.—*Results of Serum Therapy: Type I Pneumonia*

	Cases	Fatal Cases	Case Fatality Rate, per Cent	Average Age in Years*	Average Total Dose per Cc. per Patient
Treated	188	20	10.6	34.2	87.0
Untreated	85	22	25.9	34.3	

* Age distribution, 11 to 81 years.

days of illness. It will be noted that the case fatality rate of the treated group has been reduced to less than half that of the untreated group.

Among the 188 early serum treated type I cases, blood cultures were done in 127, of which 35, or 27.5 per cent, were positive. Usually pneumonias with a positive blood culture show a case fatality rate several times that of cases in which blood cultures are negative. The efficacy of the serum used is indicated by the results seen in table 5 in that patients with bacteremia

TABLE 5.—*Serum Treated Cases of Type I Pneumonia With and Without Positive Blood Cultures*

	Total Cases	Fatal Cases	Case Fatality Rate, per Cent
Culture positive	35	4	11.4
Culture negative	92	7	7.6

who were given serum early in the course of their disease did not show the high mortality rate usually seen in such bacteremic patients.

The results of similar early treatment of type II pneumonia, while encouraging, have not been as satisfactory as in type I cases. Of forty-eight type II patients treated with serum, twelve, or 25 per cent, died. The number of cases in this group is too small to warrant definite conclusions.

8. Neufeld, F., and Etinger-Tulczynska, R.: Nasale Pneumokokkeninfektion und Pneumokokkenkeimtrager im Tierversuch, Ztschr. f. Hyg. u. Infektionskr. **102**: 492, 1931. Armstrong, R. R.: Immediate Pneumococcal Typing, Brit. M. J. **1**: 187 (Jan. 30) 1932. Sabin, A. B.: Immediate Pneumococcus Typing Directly from Sputum by the Neufeld Reaction, J. A. M. A. **100**: 1584 (May 20) 1933.

COMMENT

The foregoing results, while representing merely the present state of a study which is far from being completed, are extremely encouraging in that they indicate that within limits it is possible to reduce materially the toll of deaths from certain types of pneumonia. Were serum therapy a measure so difficult in technic as to be feasible only in the hands of a selected few, we could hardly look forward to any general public health contribution in this field. Our results, as enumerated, indicating that under the conditions outlined the case fatality may be reduced over 50 per cent, lead us to hope that through far greater utilization of Felton's concentrated antibody solution a distinct contribution may be made toward reduction of the present high pneumonia death rate. There remains, however, the problem of developing a method for wider distribution of the serum consistent with the necessity of careful conservation of so expensive a product. At a later date we hope to be able to report on this.

SUMMARY

As a part of a study of lobar pneumonia in Massachusetts carried on during the past two years by the state department of public health with the financial assistance of the Commonwealth Fund, Felton's concentrated pneumococcus antibody solution has been used by physicians collaborating in the study to treat 421 cases of pneumonia. Among these were 188 cases of type I pneumonia that were treated with serum. These yielded a case fatality rate of 10.6 per cent as contrasted with a rate of 25.9 per cent of eighty-five untreated cases of the same type.

THE SIGNIFICANCE OF THE NEWLY CLASSIFIED TYPES OF PNEUMOCOCCI IN DISEASE

TYPES IV TO XX INCLUSIVE

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The classification of cases of pneumonia according to their bacterial etiology has proved of considerable value to our understanding of the disease. The majority of the cases are due to the pneumococcus, and a small minority are due to other pyogenic organisms. The division of the pneumococci into types has brought out the importance of types I, II and III and has made possible the development of specific therapeutic antiserums for types I and II.

A large number of strains that had not been serologically identified were formerly classified together for convenience as type or group IV.[1] They were known to occur in a great variety of pneumonias and other pneumococcic infections [2] but could also be recovered from the throats of about 50 per cent of normal persons on one examination, and from the throats of all on repeated examinations.[3] It remained for Cooper [4] to isolate from the miscellaneous group IV twenty-nine serologically specific strains, identified by numbers from IV to XXXII, inclusive.[5]

Our object in this paper is to survey the incidence of these miscellaneous pneumococcus types in disease seen in a general hospital. It is anticipated that a comparison between the strains of organisms found in disease and those found in the mouths of healthy individuals may lead to conclusions as to the saprophytic or pathogenic characteristics of each strain. Such a comparison is made possible by this symposium. The hope has also been entertained that the separation of cases of atypical and secondary pneumonia due to different bacteria into separate groups may bring some order into an otherwise confusing group of diseases.

TABLE 1.—*Number of Patients Examined*

Organism Recovered	Total Cases		Pneumonia Cases	
	Number	Per Cent	Number	Per Cent
Pneumococci, types I to XX	1,094	80	910	85
Pneumococci, untyped	170	12	86	9
Other organisms (Streptococcus haemolyticus, Staphylococcus aureus, Friedländer bacilli)	101	7	68	6
Total cases classified bacteriologically	1,365	100	1,064	100
No significant organism	196		82	
Total	1,561		1,146	

CLINICAL MATERIAL AND METHODS

The bacteriologic and clinical material that forms the basis for this study was collected during the course of thirty-five months. The work was directed chiefly toward the identification of the pneumococcus type in cases of lobar pneumonia in the medical services of the hospital, but specimens were obtained from many secondary pneumonias and from many pneumococcic infections other than pneumonia throughout the hospital.

All specimens of sputum were examined by means of mouse inoculation. Blood cultures were made by inoculating 5 cc. of blood into a flask containing 50 cc. of nutrient broth. In many instances, pour plates with 1 cc. of blood were made at the bedside. Other materials for culture were streaked on the surface of blood agar plates or inoculated into mice, or both.

The number of patients examined and the varieties of organisms isolated are indicated in table 1. In a total of 1,561 hospital cases, pneumococci were isolated and their type determined in 1,094 cases. Untyped

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5. The authors are indebted to Dr. W. H. Park and Miss Georgia Cooper for diagnostic serums generously provided for this study.

pneumococci were isolated in 170 cases. Other organisms, such as Streptococcus haemolyticus, the Friedländer bacillus and Staphylococcus aureus, were the principal invaders in 101 cases, making a total of 1,364 cases which form the data to be discussed. A pneumococcus was recovered from 94.3 per cent, or 996, of the 1,067 patients with pneumonia, and a specific serologic type was identified in 91.4 per cent, or 910 of the patients with pneumococci. In 307 cases autopsies were performed, from most of which further cultures were obtained directly from the lesions, and in all of which an accurate anatomic diagnosis was possible.

In the present paper only a general survey of the large amount of material that has been collected is possible. Diseases due to the new pneumococcus types that were met in significant numbers or showed any unusual features deserve careful individual analysis, such as has been reported in another section of this meeting for pneumococci of types III and VIII.[6] At this time, strains will be pointed out that will most likely repay further study. The following subjects will be discussed: the pathogenicity of the new pneumococcus strains; the reliability of sputum cultures; the incidence of the strains in patients with or without pneumonia; the tendency of each strain to produce lobar pneumonia or bronchopneumonia, to produce primary or secondary pneumonia, to produce death, or to produce purulent complications; the incidence of the strains at different age periods, and the relative incidence of organisms other than pneumococci. The peculiarities of types I, II and III will be mentioned in passing for comparison with the peculiarities of the new types.

PATHOGENICITY OF NEW PNEUMOCOCCUS STRAINS

Because the pneumococcus strains classed together in group IV have been shown to occur in the normal mouth as well as in disease, it has been necessary to

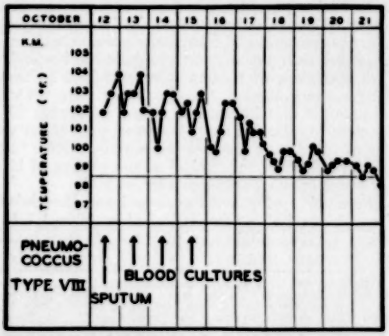

Chart 1.—Lobar pneumonia due to type VIII pneumococcus ending in recovery.

make clear the relationship of each strain to the disease, wherever possible, by means of multiple cultures from sputum, blood and lesions.

Two such cases may be cited. In the first (chart 1), a type VIII pneumococcus was recovered from the sputum of a patient on the second day after a typically acute onset. A pneumococcus of the same specific strain was recovered from the blood stream on three different occasions. The clinical course was that of acute lobar pneumonia with a rather sudden termination and rapid convalescence. In the second case (chart 2), a type V pneumococcus was recovered from the sputum and the pleural fluid during life, and from the chest fluid and heart's blood at autopsy. The lesion was lobar in

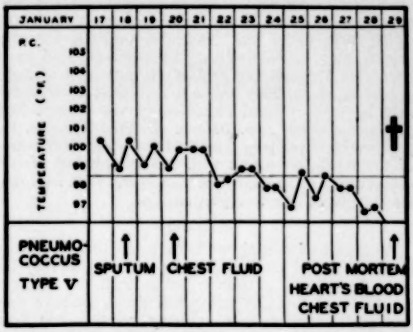

Chart 2.—Lobar pneumonia and empyema due to type V pneumococcus ending in death, with postmortem cultures.

type on histologic examination. Such cases have been seen in the presence of all but three of the seventeen new specific types covered in this study. In ninety-nine cases of pneumonia, such pneumococcus types have been obtained from the blood stream, lung or pleura.

RELIABILITY OF SPUTUM CULTURES

Owing to the wide distribution of group IV pneumococci among normal persons, it may be questioned by some whether the finding of such an organism in the sputum is evidence of its connection with pneumonia. By a comparison of the organism found in cultures of blood or cultures from infected lesions with that found in the sputum of 220 cases, an estimate has been made of the reliability of sputum examination for diagnosis of the organism at the site of the lesion. In 202 cases, the organisms recovered from blood or lesions were the same as those recovered from the sputum. Thirty-eight of these were distributed among eleven of the seventeen newer types. In only one instance, 0.5 per cent, did a direct contradiction between the two sources appear. A type V pneumococcus was found in the lung at the postmortem examination, while a type XVIII pneumococcus and a hemolytic streptococcus had been isolated from the sputum. In a total of eleven cases, 5 per cent, pneumococci were not recovered from the sputum, although a pure culture of pneumococci of a specific type was later found from another source. In all such cases, only one specimen of sputum had been examined, and in the majority it had been described as unsatisfactory. In the six remaining cases pneumococci of more than one type or other pneumonia-producing organisms were found in the sputum in cases from which cultures from blood stream or lesions were also obtained. In four of these cases, two organisms were found in the sputum and in cultures of the blood or lung. Type I was associated with Friedländer's bacilli in one case, with type III in another and with type X

6. Finland, Maxwell, and Sutliff, W. D.: Pneumococcus Types III and VIII Infection, to be published.

in another; type II was associated with type IV in the fourth case. In two instances, two different pneumococci were found in the sputum and only one in the lesion. In both cases type I was found in the lung, and type I with type XVIII in the sputum of one, and type I with type XIX in the sputum of the other. The hemolytic streptococcus and the staphylococcus were frequently present in typical pneumococcic infections at autopsy. In a few instances, however, they were obviously associated with the disease. They will be discussed later.

It is safe to assume, on the basis of these comparisons, that when one of these twenty types of pneumococci is found in the sputum of a patient who has pneumonia, by the methods used for making cultures in these cases, the same organism will also be found in the lung. When more than one serologic strain of pneumococcus is found in the sputum of a pneumonia patient by the methods used here, one may find a mixed infection in the lungs; but in any case one is quite sure to find one or the other of the organisms in the lesions or blood. If one of the two sputum pneumococci is type I, the examples show that type I is more likely to be found in the lung than the other organism.

TABLE 2.—*Incidence of Twenty Pneumococcus Types in Patients With and Without Pneumonia*

Type	Total Number of Cases	Cases of Pneumonia or Empyema			Cases of Other Pneumococcic Infections		Cases with No Pneumonia or Purulent Pneumococcic Infection	
		Number	Per Cent of Cases of All Types	Per Cent of Cases with Same Type	Number	Per Cent of Cases with Same Type	Number	Per Cent of Cases with Same Type
I	317	302	31	95	8	3	7	2
II	166	157	17	95	5	3	4	2
III	190	153	16	80	18	10	19	10
V	50	48	5	96	0	0	2	4
VII	50	40	5	83	4	7	6	10
VIII	76	69	7	90	4	5	4	5
Total	837	776	81	91	39	5	42	5
IV	21	16	1.7	76	2	10	3	14
VI	22	14	1.5	64	0	0	8	36
IX	17	15	1.6	88	1	6	1	6
X	38	30	3.1	79	1	3	7	18
XI	22	14	1.5	64	4	18	4	18
XII	10	8	0.8	80	1	10	1	10
XIII	7	6	0.6	86	0	0	1	14
XIV	20	20	2.1	100	0	0	0	0
XV	6	5	0.5	83	0	0	1	17
XVI	2	2	0.2	100	0	0	0	0
XVII	9	7	0.7	78	0	0	2	22
XVIII	37	31	3.2	84	0	0	6	16
XIX	9	6	0.6	67	1	11	2	22
XX	17	13	1.4	77	2	12	2	12
Total types IV, VI and IX to XX	237	187	19.5	79	12	5	38	16
Total	1,094	963	100	88	51	5	80	7

INCIDENCE OF PNEUMOCOCCUS TYPES IN PATIENTS WITH AND WITHOUT PNEUMONIA

The incidence of twenty pneumococcus types is shown in table 2. Types I, II, III, V, VII and VIII were each recovered in fifty or more cases, each making 5 per cent or more of the cases of pneumonia or empyema. From the standpoint of numbers, these types merit special consideration. They comprise together 78.4 per cent of patients from whom typed pneumococci were recovered and 81 per cent of the patients with pneumococcic pneumonia. They vary considerably in the frequency with which they occur in pneumonia or empyema. About 95 per cent of types I, II and V, about 90 per cent of type VIII, and about 80 per cent of types III and VII were recovered from patients who had either pneumonia or empyema. The remainder of the types, numbered IV, VI and from IX to XX, were each found in from 0.2 to 3.2 per cent of the cases —a total of 19.5 per cent. Two of these types, IX and XIV, were found almost entirely in patients with pneumonia. The proportion of cases of pneumonia or empyema in the whole group of the less frequent types IV, VI, and from IX to XX was 187 of 237, or 79 per cent.

Twelve per cent of the patients had no pneumonia but had either purulent infections, such as meningitis, otitis media, mastoiditis, osteomyelitis, salpingitis, peritonitis, septic abortion, abscess due to the pneumococcus, or no apparent pneumococcic infection. The proportion of patients with purulent infections was the same in the group of the six most common types as in the group of fourteen rarer types. The proportion of patients with no pneumococcic infection was lower among the six most frequent types than among the rarer types, 5 per cent as compared with 16 per cent among the latter. Types VI, X and XVIII stand out because they occur relatively more often in patients in whom no infection was diagnosed than in patients with purulent infections. The total number of cases presenting purulent infection and the total number showing no pneumococcic infection from whom type III was obtained is by far the largest of any of the types.

LOBAR PNEUMONIA AND BRONCHOPNEUMONIA

It is of interest to note the associations of these pneumococci as etiologic factors in the classes of pneumonia that are generally recognized; namely, lobar pneumonia and bronchopneumonia. Such an attempt presents difficulties due chiefly to the fact that clinicians usually consider that sharp differentiation of the two processes is next to impossible. A division on the basis of postmortem examinations is relatively simple and this was used whenever possible. In the absence of postmortems, reliance was placed on roentgen and physical observations. The proportions of lobar pneumonia and bronchopneumonia diagnosed clinically agreed remarkably well with those determined at autopsy.

Chart 3 shows the number and percentage of lobar pneumonias and the number and percentage of bronchopneumonias that were found in patients from whom the six most frequent pneumococcus types were obtained,

and the number and average percentage of the remaining fourteen less frequent types. In chart 4, the distribution among the cases examined post mortem is presented. The generally higher percentage of bronchopneumonia among those coming to autopsy is probably the result of a higher death rate among the patients with bronchopneumonia. Type IX, in which fourteen cases among fifteen were found to be lobar pneumonia, is the only type other than types I and II that is associated with lobar pneumonia in more than 90 per cent of the cases. The other pneumococcus strains are associated with lobar pneumonia in the clinic (chart 3) in from 66 to 82 per cent of the cases, and in the necropsy room (chart 4) in from 25 to 76 per cent of the cases.

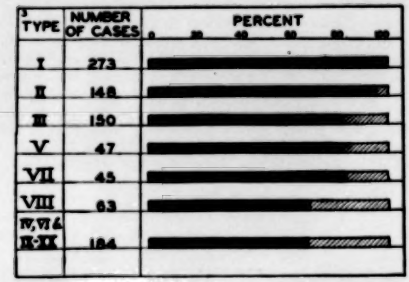

Chart 3.—Percentage of lobar pneumonia and bronchopneumonia in cases due to pneumococci of types I, II, III, V, VII, VIII and the sum of the remaining fourteen types. Solid bar shows percentage of lobar pneumonia; cross hatched bar shows percentage of bronchopneumonia.

The relative incidence of all the organisms considered in this survey in the 839 cases of lobar pneumonia is as follows: typed pneumococci, 770 cases, 92 per cent; untyped pneumococci, 52 cases, 5 per cent; other organisms, 17 cases, 2 per cent. Of the typed pneumococci the first six types in order of frequency are I, II, III, VIII, V and VII, making altogether 84.1 per cent of the typed lobar pneumonia cases. The same organisms were found in 215 cases of bronchopneumonia in the following proportions: typed pneumococci, 140 cases, 65.1 per cent; untyped pneumococci, 34 cases, 16 per cent; other organisms, 41 cases, 19 per cent. Of the typed pneumococci, the first ten types in order of frequency are III, VIII, XVIII, X, V, VII, XX, II, XI and XIV, making together 81.1 per cent of the whole.

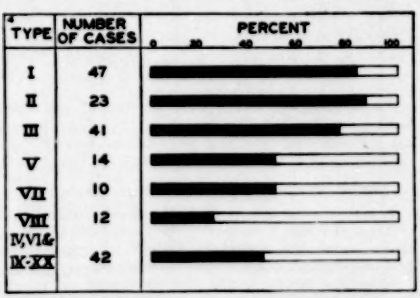

Chart 4.—Percentage of lobar pneumonia and bronchopneumonia in cases examined postmortem due to pneumococci of types I, II, III, V, VII, VIII separately and due to the sum of the remaining fourteen types. Black bar shows percentage of lobar pneumonia; white bar shows percentage of bronchopneumonia.

The separation of the cases into lobar pneumonia and bronchopneumonia has brought out the progressively more frequent occurrence of bronchopneumonia in the six most frequent types according to their numerical order, and the relatively high incidence of bronchopneumonia in the average of the remaining fourteen types. Type IX is an exception to this, being found in lobar pneumonia in more than 90 per cent of the cases. The relative frequency of the pneumococcus types and other organisms differs markedly in lobar pneumonia and bronchopneumonia.

PRIMARY AND SECONDARY PNEUMONIA

In an etiologic classification of pneumonia, the conception of primary and secondary pneumonia is of obvious importance. There are certain situations in which patients already ill and in the hospital may develop either lobar pneumonia or bronchopneumonia. Since there is probably no difference in the exposure of such patients to contact with pneumococci and the exposure of other patients in the same hospital, it seems probable that the disease or procedures which they undergo either increase the ease of penetration of the organism to the lung or change the conditions in the lungs or body in such a way that the usual amount of organisms set up an infection more readily than usual. The types of primary illness that were considered are as follows: infectious diseases, surgical operations and obstetric procedures, and degenerative diseases. Chart 5 illustrates the proportions of lobar pneumonia and bronchopneumonia, which were primary and secondary. Lobar pneumonia due to the six most common pneumococcic types was secondary to the diseases just mentioned in a very small proportion of the cases, from 5 to 7 per cent of the total, with the exception of lobar pneumonia due to type III pneumococcus, in which 17 per cent of the cases were secondary. The average for the remaining fourteen types is 9.1 per cent. Bronchopneu-

Table 3.—*Death Rates of Lobar Pneumonia and Bronchopneumonia Due to Pneumococci of Types I to XX, Inclusive*

Type	Lobar Pneumonia Cases: Total Number	Lobar Pneumonia Cases: Died Number	Lobar Pneumonia Cases: Died Per Cent	Bronchopneumonia Cases: Total Number	Bronchopneumonia Cases: Died Number	Bronchopneumonia Cases: Died Per Cent	Total Pneumonia Cases: Total Number	Total Pneumonia Cases: Died Number	Total Pneumonia Cases: Died Per Cent
I	268	80	29.6	5	3	60	273	83	59
II	142	55	39.0	6	5	83	148	60	40.5
III	121	79	65.3	29	15	51.8	150	94	62.6
V	38	14	36.8	9	8	89	47	22	46.8
VII	37	11	29.8	8	7	87.5	45	18	40.0
VIII	42	10	23.8	21	14	67.0	63	24	38.0
IV	14	5	35.7	2	2	100.0	16	7	43.8
VI	9	5	55.5	3	1	33.3	12	6	50
IX	14	3	21.4	1	0	0	15	3	20
X	19	7	36.8	10	5	50	29	12	41.4
XI	8	1	12.5	6	3	50	14	4	28.6
XII	6	2	33.3	2	1	50	8	3	37.5
XIII	4	2	50.0	2	1	50	6	3	50
XIV	14	1	7.1	6	4	67	20	5	20
XV	3	1	33.3	2	1	50	5	2	40
XVI	1	0	0	1	1	100	2	1	50
XVII	1	0	0	6	4	67	7	4	57.7
XVIII	19	8	42.1	12	9	75	31	17	55
XIX	4	1	25.0	2	0	0	6	1	17
XX	6	1	17.0	7	4	57.2	13	5	38.5
IV, VI and IX to XX inclusive	122	37	33.0	62	36	58.0	184	73	39.6
Total I to XX	770	286	37.1	140	88	62.8	910	375	41.2

monia, on the other hand, was secondary in the great majority of cases. Because the numbers in each type were comparatively small and the percentage incidence of secondary pneumonia in the individual types varied relatively little, only the average is shown in chart 5. Forty-seven cases were primary, and ninety-four cases, or 66.7 per cent, were secondary. No particular association between any individual primary disease and any pneumococcus type was noted.

TABLE 4.—*Purulent Pneumococcic Complications of Pneumonia Developing in the Hospital*

Type	Empyema		Other Complications	Total Complications	
	Number	Per Cent of Pneumonia Cases	Number	Number	Per Cent of Pneumonia Cases
I	32	12	13	45	17
II	4	3	6	10	7
III	7	5	4	11	7
V	7	14	6	13	28
VII	2	4	3	5	11
VIII	1	2	2	3	5
IV	2	5	1	3	19
VI	1	3	0	1	8
IX	1	7	0	1	7
X	1	4	1	2	7
XI	0	0	1	1	7
XII	1	13	0	1	13
XIII	1	17	0	1	17
XIV	3	15	0	3	15
XV	0	0	1	1	—
XVI	0	0	0	0	0
XVII	0	0	0	0	0
XVIII	3	10	1	4	13
XIX	1	17	0	1	..
XX	0	0	0	0	0
Total IV, VI and IX to XX	14	8	6	20	11

DEATH RATES

From the point of view of the possible usefulness of the determination of the serologic type of the pneumococcus, no feature is more important than its prognostic value, which may be determined from the death rate in disease caused by the individual organism. The number of patients and the percentage of deaths are given in table 3 for each pneumococcus type in lobar pneumonia and bronchopneumonia, separately and together. The mortality of type I and II lobar pneumonia is modified by the inclusion of ninety-seven and forty-six specifically treated patients, respectively. Pneumonia produced by most of the different serologic varieties has similar death rates. For lobar pneumonia the average is 37.1 per cent. The variations that stand out and are based on a significant number of cases are those of type III and type VIII lobar pneumonia, the former having an unusually high death rate, the latter having a death rate lower than the average. Variations also occur among the less frequent types from 7.1 to 55.5 per cent, types IX, XI and XIV apparently being less virulent, and types VI and XVIII more virulent than the average. For bronchopneumonia, the death rates of the different types are still more similar and uniformly high, averaging 63.2 per cent. It should be noted that both lobar pneumonia and bronchopneumonia caused by the organisms formerly classed as group IV are as serious as the pneumonias due to the more frequent types.

PURULENT COMPLICATIONS

The purulent complications occurring in pneumonia, as shown in table 4, were well distributed through the list of pneumococcus types, the incidence varying from none in some of the rarest types to as high as 28 per cent in type V. The latter type has a higher incidence of purulent complications, both empyema and others, than type I. Except for types in which the numbers are not significant, type I has the second highest incidence and is responsible for about 50 per cent of empyemas and other purulent complications.

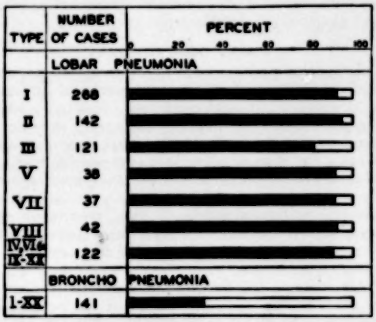

Chart 5.—Percentage of primary and secondary cases among the lobar pneumonia cases and the bronchopneumonia cases. Black bar shows percentage of primary pneumonia cases; white bar shows percentage of secondary pneumonia cases.

TABLE 5.—*Cases of Pneumonia from Which the Hemolytic Streptococcus, Staphylococcus Aureus and Friedländer Bacillus Were Recovered*

Organism	Pneumonia Cases		More Than One Organism Isolated							
					Pneumococci Present			One Organism Isolated		
	Number	Per Cent of Total Pneumonia Cases	Number of Cases	Per Cent of Cases	Number of Cases	Lobar Pneumonia Cases, Number	Broncho-pneumonia Cases, Number	Number of Cases	Lobar Pneumonia Cases, Number	Broncho-pneumonia Cases, Number
Hemolytic streptococcus	77	7.2	30*†	39	20	14	6	47	10	37
Staphylococcus aureus	22	3.0	28*	88	19	12	7	4	1	3
Friedländer bacillus	16	1.5	9†	56	8	7	1	7	6	1

* Hemolytic streptococcus and Staphylococcus aureus from nine cases.
† Friedländer bacillus and hemolytic streptococcus from one case.

AGE DISTRIBUTION

Types I and II show a high incidence in early ages. Type III shows a high incidence in later age groups, as reported by others.[7] The remaining pneumococcus types, type VII, type VIII and the sum of the other fourteen, present rather similar age curves, most of the cases occurring between the ages of 20 and 59 years.

7. Cecil, R. L.; Baldwin, H. S., and Larsen, N. P.: Lobar Pneumonia; A Clinical and Bacteriologic Study of Two Thousand Typed Cases, Arch. Int. Med. 40: 253-280 (Sept.) 1927.

INCIDENCE OF ORGANISMS OTHER THAN PNEUMOCOCCI

In a relatively small proportion of the patients with pneumonia, organisms other than pneumococci were found in cultures from the blood or lesion. The incidence of each of these organisms, hemolytic streptococci, staphylococci and Friedländer bacilli, is given in table 5. The outstanding frequency of their association with pneumococci and with one another is noted (from 39 to 88 per cent of the cases). It seems probable that in many instances these organisms are secondary or accidental invaders in their relationship to pneumonia. This point of view is supported in the case of the hemolytic streptococcus and the staphylococcus by the observation that in the cases in which the pneumococcus and one of these organisms are associated the lesion is usually that of lobar pneumonia rather than of bronchopneumonia, whereas the lesion in the lungs when either hemolytic streptococci or staphylococci are found alone is generally patchy

SUMMARY AND COMMENT

This general survey of the incidence of twenty serologically specific strains of pneumococci and of hemolytic streptococci, staphylococci and Friedländer bacilli in the pneumonia cases in a general hospital in an interepidemic period shows that each one of these organisms may cause the disease. The rare type-specific pneumococci numbered from IV to XX are consistently present in the sputum and lesions in certain cases of lobar pneumonia and bronchopneumonia. The presence of such pneumococcus strains in the sputum of patients with pneumonia is a reliable indication of their presence in the lung.

Exact etiologic diagnoses of pneumococcic pneumonia were made by the use of seventeen of the new typing serums, in a group of cases in which this has heretofore been impossible, amounting to 30 per cent of the total number of lobar pneumonia cases, and in 65.1 per cent of the relatively little understood and important group of bronchopneumonia and secondary pneumonia.

The order of frequency of the six most frequent pneumococcus types in pneumococcic lobar pneumonia is as follows: I, II, III, VIII, V and VII, making together 84.1 per cent of the cases, and the order of frequency of the ten most frequent types in pneumococcic bronchopneumonia is: III, VIII, XVIII, X, V, VII, XX, II, XI and XIV, making altogether 81.1 per cent of the cases. The six types most frequent in lobar pneumonia are also those most frequent in the whole series and have been given more attention than the others.

Certain individual characteristics of the pneumonias caused by the new pneumococcus types from IV to XX are brought out and compared with the better known types I, II and III. The three most frequent of the newer types are V, VII and VIII. Type V makes up 5 per cent of the total of pneumococcic pneumonias or empyemas and causes either pneumonia or empyema in 96 per cent of the cases in which it is found and leads to purulent complications in 28 per cent of the pneumonia cases. Type V is associated with lobar pneumonia rather than bronchopneumonia in only 81 per cent of the cases, in which respect it resembles most of the newer types. Its age distribution is quite irregular and without the usual preponderance in middle life. Type VII is associated with pneumonia or empyema in only 80 per cent of the cases but leads to purulent complications in 11 per cent, a rather high proportion of these pneumonia cases. Type VIII is associated with pneumonia or empyema in 90 per cent of the cases in which it is isolated and has a low mortality in lobar pneumonia, 23.8 per cent, but, owing to an average bronchopneumonia mortality of 67 per cent, has a total mortality near the average.

The experience afforded by the bacteriologic classification of this series of pneumonia cases has indicated that the pneumonias due to different serologic strains of pneumococci and due to other organisms may be regarded as separate entities. By identifying such organisms in every case, the clinician may make accurate etiologic diagnoses and prognoses, the epidemiologist may unravel the factors affecting the organism and the patient leading to the development of atypical and secondary pneumonia, and the physician may apply the large amount of information about pneumococcus type specificity to the cure and protection from pneumococcic infections.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DR. SMILLIE, DRS. HEFFRON AND ANDERSON, AND DRS. SUTLIFF AND FINLAND

DR. H. A. REIMANN, Minneapolis: Drs. Sutliff and Finland have pointed out the desirability of regarding all cases of pneumonia from an etiologic point of view. This procedure is now inevitable. The terms lobar pneumonia and bronchopneumonia are becoming obsolete and will be superseded by terms indicating the causative organism. It is already possible to diagnose and classify by clinical and laboratory methods several distinct entities, for example, types I, II and III pneumococcic pneumonia, streptococcic pneumonia and staphylococcic pneumonia. Other forms, although at present less well defined, are being actively investigated and no doubt will soon be clearly differentiated from the confused group heretofore regarded as bronchopneumonia. It is only by methods of etiologic classification that further progress can be made in the development of specific prophylaxis or therapy. The studies of Drs. Sutliff and Finland are of especial importance in regard to the pneumococcus types recently classified. It is no doubt bewildering at first to many, even to those actively interested in pneumonia, to learn that there are now thirty-two types, and number thirty-three has just been added by Silberstein. The question at once arises as to the practical application of the knowledge of these new types. At present, obviously, it is technically impossible to prepare and have on hand thirty-three types of specific antiserum. The great value of the classification of pneumococcus types, as Dr. Sutliff stated, lies in furthering accurate diagnoses and prognoses and in regard to epidemiology. Gundel in Germany has shown that different types predominate in different localities which can be explained on the basis of contact infection. These studies are valuable additions to the knowledge gained in the various army camps during the influenza pandemic of 1918; namely, that the predominating form of pneumonia depends on the predominating organisms in a given locality. Although the recognition of the multiplicity of types of pneumococci would seem at first to be confusing and to be of purely academic interest, it will, as a matter of fact, prove to be a simplification. It will become possible to recognize separate entities and to develop specific prophylaxis and therapy.

DR. WILLIAM H. PARK, New York: Those who have been in this pneumococcus work for some time realize the difficulties which Dr. Anderson and Dr. Heffron undertook when they tried to utilize in the smaller communities the knowledge obtained in our large hospitals. It meant that they must have laboratories with competent technicians; that they must have serum for at least some of the types; that they must have clinicians available to meet the physicians in these smaller towns to aid them in their use of the serum. The work of Dr. Smillie and Drs. Sutliff and Finland is much in the line of what we have been doing in New York except that it is

even more extensive. One point I want to bring out which they didn't touch on is that in little children the comparative frequency of types is quite different from that in adults. This is true of both bronchopneumonia and lobar pneumonia. The percentage of bronchopneumonia under 2 years is much higher than that above 2 years. The streptococci are more frequently encountered in bronchopneumonia. While the type I pneumococcus is fairly abundant, type II is almost absent in children and type III is quite infrequent. There are five other types among the thirty or more separated equally important with type I, so that it is a much more complicated matter to treat children than adults, in whom types I and II cover about half the cases. Fortunately, type I serum is probably the best of the therapeutic serums, and type II is very useful. I question greatly the therapeutic value of type III serum. The types of pneumococci are only slightly allied, and for therapeutic purposes one must use a serum produced in a horse through the stimulus of the type of pneumococci producing the case of pneumonia to be treated. Unfortunately, the horse will make a good therapeutic serum for only two or, at most, three types of pneumococci; therefore it seems almost impossible at present to think of having serums for more than a few of the most frequent types because of the expense of obtaining these serums. At present types I and II are being made commercially and satisfactorily. As to the thirty types of pneumococci, there are really probably fifty or sixty types, but Miss Cooper has stopped tabulating the additional types. The point is that there are only seven or eight prevalent types and about twenty more slightly prevalent types, and the rest are so scattering that they are practically of no interest. I want to say that the thanks which have been given are not due me but to Miss Cooper. As to the use of pneumococcus vaccine, I think there is hope that physicians may be able to use a vaccine with advantage, because advances have recently been made in the preparation of vaccines and in methods of administration.

DR. MAXWELL FINLAND, Boston: The clinician faced by a group of thirty-two different strains of pneumococci is doubtless appalled. The laboratory technician and the careful epidemiologist likewise feel overwhelmed at the idea of maintaining such a large set of serums and of agglutinating each pneumococcus with them all. In addition, the latter workers must also become acquainted with the special idiosyncrasies of each of these specific strains. This symposium and work along similar lines in Boston, New York and elsewhere in this country and abroad are doing much to simplify the current conception of the importance of the various types of pneumococci. From these studies it appears that only three or at most five or six of the newly classified types occur with any great frequency in disease. If these studies have done nothing more, they have shown the direction in which effort must be concentrated. I should like to add one word with respect to the etiologic relationship of the newly classified pneumococci to disease. During the past year Dr. Alexander W. Winkler and I have studied the specific antibody response of patients with pneumonia associated with these types. Briefly, the immunity resulting from lobar pneumonia and, in many instances, from bronchopneumonia due to these types was found to be type specific in character. Agglutinins for the homologous type of pneumococcus were demonstrated about as frequently as in similar type I and II cases, and agglutinins for heterologous types were very rare. We believe that these observations tend further to support the etiologic relationship of the newly classified types to pneumonia.

DR. M. E. BARNES, Iowa City: I should like to ask Dr. Smillie in regard to studies made on the normal cases as controls; how often does he find pure type cultures with these characteristics? How often did he find mixed types? He reported the homologous organism, I believe. How often did he find pure cases of homologous organism, may I ask?

DR. WILSON G. SMILLIE, Boston: Individuals may have two or even three types of pneumococci in the nasopharynx, but this is not a common occurrence. Usually an individual, either a contact with a case of pneumonia or a person of the general population, has only one strain in the nasopharynx. Dr. Park mentioned the fact that there may be certain variations in different parts of the country or different parts of the world in relation to the incidence of these various types of pneumococci. This was shown interestingly in studies of isolated communities in the South, in Alabama, in Labrador, in Spitzbergen, and in the West Indies. These different communities have an entirely different picture so far as their specific types of pneumococci are concerned. Type III, however, is the most protean. It is feared most. It has the highest death rate of any of the types of pneumococci, and yet it is by far the most common type of pneumococcus one finds in general communities. One person out of every four in this assembly has the type III pneumococcus in the nasopharynx. Curious as that may be, it nevertheless is a fact. The death rate, when it produces pneumonia, is very high. It is a fatal disease of elderly people. The young people who have type III pneumonia are not likely to succumb.

RELIEF OF PELVIC PAIN BY SYMPATHETIC NEURECTOMY

REPORT OF SEVEN CASES IN WHICH THE SUPERIOR HYPOGASTRIC PLEXUS (PRESACRAL NERVE) WAS RESECTED

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In this contribution I might well begin by paraphrasing the remarks of Dr. Edward Archibald, who, before the seventeenth annual meeting of the National Tuberculosis Association in 1921, called attention to the backwardness of American surgeons in accepting thoracoplasty as an aid to the cure of pulmonary tuberculosis. He said: "America is not generally supposed to be arrière, in matters surgical, nor is she; yet it is somewhat strange that in this country the treatment of certain types of pulmonary tuberculosis should have remained so far behind the standard set for some years back, in Europe." The substitution of "pelvic pain" for "pulmonary tuberculosis" expresses what I mean.

As far back as 1899[1] there were reports from European authors relative to the relief of various types of pelvic pain by means of sympathetic nerve surgery. A more recent contribution by Cotte[2] in 1925, however, is the basis on which the present operation is performed.

It is true that in the beginning many of the methods of approach and the structures attacked made the operation at times a formidable one. Experience and a better knowledge of the anatomy of the sympathetic nerve supply of the pelvic viscera have, however, made the operation as now practiced one which in competent hands should carry as low an operative mortality rate as any other elective pelvic operation. The same structures are attacked as in operations for the relief of motor dysfunctions of the lower intestinal tract, such as Hirschsprung's disease and the chronic rectal type of obstipation.[3] I have been unable to find a mortality following this operation reported in the American literature. Fontaine and Herrmann[4] report one death two days following operation. The autopsy disclosed only an edema of the brain, which would very likely in this case have followed any other pelvic operation.

From the Gynecological Department of St. Joseph Hospital.
Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 16, 1933.

1. Jaboulay, M.: Le traitement de la nevralgie pelvienne par la paralyse du sympatique sacré, Lyon méd. **90**: 102, 1899.
2. Cotte, G.: La sympathectomie hypogastrique a-t-elle sa place dans la thérapeutique gynécologique? Presse méd. **30**: 98 (Jan. 24) 1925.
3. Rankin, F. W., and Learmonth, J. R.: Section of Sympathetic Nerves of the Distal Part of the Colon and Rectum in the Treatment of Hirschsprung's Disease and Certain Types of Constipation, Ann. Surg. **92**: 710 (Oct.) 1930. Wetherell, F. S.: Effects of Sympathetic Nerve Surgery in Certain Intestinal Conditions, ibid. **97**: 481 (April) 1933.
4. Fontaine, René, and Herrmann, L. G.: Clinical and Experimental Basis for Surgery of the Pelvic Sympathetic Nerves in Gynecology, Surg., Gynec. & Obst. **54**: 133 (Feb.) 1932.

The scope of this paper is not intended to cover the detailed anatomy and physiology relative to that portion of the sympathetic nervous system discussed. Only so much of these subjects as will give the reader a general idea is, therefore, included here.

GROSS ANATOMY OF THE SUPERIOR HYPOGASTRIC PLEXUS AND ITS CONNECTIONS

Coursing downward on either side of the anterior wall of the abdominal aorta may be seen two sympathetic nerves. They begin above at the origin of the superior mesenteric artery and are called intermesenteric nerves. At the level of the inferior mesenteric artery the left nerve gives off a plexus of nerves which follows the inferior mesenteric artery and its branches. Below the inferior mesenteric artery the two nerves unite to form the beginning of the superior hypogastric plexus (presacral nerve). This is rarely a single nerve, as a rule forming a true plexus. This plexus lies anterior to the bifurcation of the aorta and is separated from it by a thin layer of fascia. The main portion of this plexus usually lies in close relation to the left common iliac artery. At the upper level of the promontory of the sacrum the superior hypogastric plexus divides into two distinct nerves, called the inferior hypogastric plexus. Many variations of the plexus are encountered. In the main, it is a triangular mass and receives fibers from the inferior mesenteric plexus lying within the pelvic mesocolon at its left, and also from the lower ganglions of the lumbar sympathetic chain. Elaut [5] has given the name "interiliac trigon" to the area in which the plexus is found. This trigon is at the level of the lower third of the fourth lumbar vertebra, the last intervertebral cartilaginous disk, and the fifth lumbar vertebra (the term "presacral" being therefore a misnomer). The apex of the triangle is at the bifurcation of the aorta and its sides are formed by the two common iliac arteries, the base being a line connecting the arteries at the upper level of the promontory of the sacrum.

The inferior hypogastric nerves, 2 or 3 inches in length, course along the internal iliac arteries and give branches to them which follow the various branches of the arteries. The nerve supply of the rectum and, in the main, to the ureters, is derived from the inferior hypogastrics. After these branches are given off, a mass of nerve fibers and ganglion cells is formed which is called the hypogastric ganglion. Visceral branches to the pelvic organs are derived from the medial surface of this mass. Five superior hypogastric plexuses removed from the patients whose histories follow show a general triangular outline and numerous communicating fibers.

PHYSIOLOGY

The sympathetic nervous system, as has so well been demonstrated in the surgery of this system in relation to vasoconstrictor disease, supplies the impulse of contraction to the arteries. The work of von Gaza [6] points to the possibility that pain sense is conveyed by sympathetic nerve fibers. Pain in the viscera is dependent on other causative factors than is the pain from the body surface. The former results when there is abnormal distention, spasm or anemia.

5. Elaut, L.: The Surgical Anatomy of the So-Called Presacral Nerve, Surg., Gynec. & Obst. **55**: 581 (Nov.) 1932.

6. von Gaza, W.: Ueber paravertebrale Neurektomie an grenzstrange und paravertebrale Injectionstherapie: Ein Beitrag zur Behandlung neurotisch-dysfunctioneller Krankheitszustande bauchinnerer Organe, Klin. Wchnschr. **3**: 525 (March 25) 1924.

The connections of ganglions of the sympathetic chain with the spinal centers explains the reference of pain to the surface. This pain is usually referred to definite segmental zones corresponding to the level at which the sympathetic fibers connect with the peripheral nerve fibers. The pains of gallbladder colic and ureteral colic, so well known to physicians, are classic examples. Relief of pain in the pelvis following resection of the superior hypogastric plexus indicates that pain impulses are conveyed to the central nervous system by way of these fibers, although the exact mechanism is still in question.

TYPES OF PAIN

Every physician in active practice has at times found himself at his wit's end to find therapeutic measures, excepting opiates, that would relieve pelvic pain. Many of the afflicted individuals have often been placed in the category of "disturbing neurasthenics." Most of these patients are seen in the beginning by the family physician, and his attention, as well as that of gynecologists and abdominal surgeons, should be called to the relief afforded by resection of the superior hypogastric plexus and to the types of pain that may be relieved.

Group A. One of the severest types is the pain of metastatic involvement following carcinoma of the uterus.

Group B. While not as severe, but nevertheless of a character that causes not only distress but also a varying amount of disability, is the pain that is present following pelvic operations. This group includes those cases in which the very pain for which the operation was originally performed is still present, and those in which the pathologic lesion found at the time of operation is often very slight in extent, consisting in the main of adhesions, or sclerotic ovaries that may or may not show cystic degeneration.

Group C. The third type is the one occasioned by functional dysmenorrhea—unrelieved by any of the known therapeutic methods, not including the use of opiates, radiation or hysterectomy.

Irradiation and hysterectomy are such radical measures when applied to young women that an operation which conserves function and at the same time gives relief should readily be accepted by the medical profession as an addition to its therapeutic armamentarium, provided it is reasonably safe in its application. My experience has been limited to the three types mentioned.

Relief has also been reported in cystalgia, pruritus vulvae, vaginismus, and dyspareunia.

GROUP A

CASE 1.—M. P., a housewife, aged 29, married, entered the hospital, Oct. 12, 1932, because of prolonged and profuse vaginal bleeding of a year's duration. A year before her admission she noticed that she was flowing longer at each period and that there was an increasing dysmenorrhea. For the past few months she had bled from twenty to twenty-five days every month and this flow was accompanied by steady pain in the lower part of the abdomen and in the umbilical and both iliac regions. A section from the cervix showed epidermoid carcinoma. She was in severe pain constantly, yet pelvic examination showed the uterus freely movable and there was no indication of extention of the malignant condition. The growth seemed to be confined to the posterior wall of the cervix. Her temperature ranged from normal to between 100.4 and 102 F. There was great tenderness on bimanual examination, and the possibility of a subacute pelvic inflammatory disease was considered. Her sedimentation time, taken on five different occasions from October 12 until November 15, ranged

from ten to forty minutes. Her pain became so severe that she required several doses of one-sixth grain (0.01 Gm.) of morphine every twenty-four hours, and she had a very poor appetite, eating but little.

It was decided to explore the pelvis, which was done, November 21, with the idea of removing chronically infected fallopian tubes, if found, so that radiation therapy might be begun. The tubes were found to be slightly thickened, with thin adhesions to the broad ligament, but they did not have the appearance of having been the site of any recent inflammatory reaction. They were not removed because of the feeling that it would not be well to do so in the presence of a malignant condition. Our judgment proved correct in that there was no reaction following irradiation. The hypogastric plexus was dissected free and removed. At the end of the abdominal operation, radium was inserted in the cervix. A second treatment with radium was given, December 7, and at this time the patient was still free from pain. Three days after the operation she stated that she was entirely free from her pain, and she had not required an opiate since the first day after the operation, was hungry and eating well. She was still comfortable in February, 1933.

CASE 2.—G. T., a housewife, aged 30, married, admitted to the hospital, May 22, 1933, complained of terrific pain in the pelvis and inner side of the upper left thigh. She had been in the hospital on two previous occasions during the past two years for the treatment by radiation of carcinoma of the cervix. Examination on admission disclosed a grade 4 carcinoma, the uterus being fixed and with definite extension into the parametrial tissues. The pain was without a doubt due to the extensive metastatic involvement. She had been getting one-sixth grain of morphine hypodermically every three or four hours, despite which she often screamed with pain. A superior hypogastric resection was done, May 29.

The patient required one dose of morphine the first day after the operation. On the second day after the operation she began to complain of the pain in her thigh, saying that the pelvic pain was entirely relieved but the pain in the thigh was still present and as severe as before. A small dose of codeine relieved the pain in the thigh, which was only spasmodic on the tenth postoperative day.

Case 1 is an example of severe pelvic pain in an early carcinoma of the cervix. The growth was limited to the posterior wall and the explanation may be that a secondary inflammatory reaction in the uterosacral ligaments, which are very richly supplied by sympathetic nerves, accounted for the pain. It has been suggested that, since many grade 3 and grade 4 carcinomas eventually cause severe pain, it might be well to explore the pelvis and do a "prophylactic resection" of the superior hypogastric plexus. There can be no objection to resection in carcinomas of grades 1 and 2, particularly if there is pain present. Such a routine would give the operator an excellent insight into pathologic conditions existing in the pelvis in conjunction with carcinoma and might be an aid in determining the technic of future irradiation in a given case.

In case 2 the mesentery of the sigmoid was displaced to the right, in the manner described by Elaut,[8] which made the resection difficult and precluded the possibility of doing either a periarterial sympathectomy of the common and external iliac arteries or a ganglionectomy of the lower left lumbar ganglions. It is for that reason that this patient still has pain on the inner side of the thigh. As soon as the patient's condition permits, a left lumbar ganglionectomy will be performed.

GROUP B

CASE 3.—M. K., a housewife, aged 42, married, admitted to the hospital, Aug. 25, 1932, complained of sharp pain in the lower part of the abdomen and pelvis and in the sacral region, the pain being practically constant. She also complained of frequency of urination (every ten to fifteen minutes). The latter she had noticed for one year, although the present frequency had been present for only two months. There was no burning on urination. Urologic examination disclosed nothing to account for this frequency. There was no sugar in the urine. The blood sugar was 131 mg. She had had two operations for ectopic pregnancy. Pelvic examination disclosed a moderately enlarged, nodular uterus with some evidence of the presence of adhesions.

Examination of the lumbosacral spine revealed no lesions that could account for the back pain. She was operated on, August 30. The uterus, about the size of a small grapefruit, contained numerous fibroids and was removed with the left ovary. The right ovary, which appeared normal, was left in. Her postoperative course was uneventful. She was seen in the follow-up clinic at monthly intervals until December 20, and the last report from her is dated May 31, 1933. She has had no pain and has had regular bowel movements without the use of cathartics, which were taken regularly before the operation. The urinary frequency gradually lessened until Dec. 20, 1932, when there was a three and one-half to four hour frequency, but her last report states that she is again having a one-half hour frequency.

CASE 4.—K. M., a housewife, aged 25, entered St. Joseph Hospital, Oct. 3, 1932. Her chief complaint was a severe, constant, aching pain in the right lower iliac region with some pain also present in the left iliac region, which, however, was not quite as severe as that on the right side. Pelvic examination disclosed a uterus about the size of a two months pregnancy, and generalized pelvic tenderness. The Aschheim-Zondek test was positive. She had one child, aged 5 years. Since the birth of this child she had two miscarriages, one three and one-half years before admission, which occurred at six and one-half months, and one two and one-half years before, which occurred at six and one-half months; six months before, she aborted at six weeks. Her last period was two months before admission. At that time she went to bed for four days because of pain and cramps. This was her last menstruation up to the time of her admission to the hospital.

She had been in another institution before her admittance to St. Joseph Hospital, having gone there because of the severity of the pelvic pain. Nothing was done about it during her stay there except to give her anodynes, which gave her very little relief. It was quite apparent that the woman was having severe pain and this pain was not typical of any definite pathologic condition. There was some tenderness over the appendix, but the pain of which she complained was all below this point.

All the usual medical means for the relief of her pain were tried for a week, but nothing short of opiates gave her any relief. It was then decided to do an exploratory operation with the idea of removing any pathologic conditions which might be found.

The appendix seemed to be somewhat congested and it was removed. The uterus was about the size of a two months pregnancy. The superior hypogastric plexus was resected. The appendix was removed as a routine, yet the pathologic report states that there was "chronic and some acute appendicitis." She left the hospital, October 23, twelve days after the operation, and was entirely free from the pain for the relief of which she had entered the hospital. Five months later she was still free from the pain, and there had been no effect on the pregnancy.

CASE 5.—A. D., a woman, aged 32, divorced, admitted to the hospital, Aug. 26, 1932, complained of generalized pelvic pain. She had had three abdominal and pelvic operations for the relief of pain over a period of six years, yet she still suffered from the same pain. She had recently been discharged from another hospital with the diagnosis of neurasthenia. Pelvic examination disclosed generalized tenderness. The director of the local Veterans' Bureau stated that the woman had cost them many hundreds of dollars and that they were anxious to have something done that would rid her of her pain. They doubted very much, however, because of her repeated visits to hospitals, that anything could be done for her and were rather unwilling to shoulder any more financial burden in her case. On the off chance, however, that a superior hypogastric

resection might relieve her pain, this operation was performed, August 30, by my associate, Dr. Floyd R. Parker. The only pathologic conditions discoverable were a few adhesions and a sclerotic, cystic ovary. The ovary was removed. One ovary remained. In December, she reported complete relief.

CASE 6.—A. L., a housewife, aged 23, married, admitted to the hospital, Sept. 1, 1932, complained of pain in the lower right side of the abdomen. This pain had been very severe for one week before her admission. She had had some pain in the right groin for six months, the pain radiating upward toward the kidney and downward into the right thigh. She had no urinary symptoms at any time. There was no pain on the left side. Urologic examination disclosed no pathologic condition. In November, 1929, her right tube, ovary and appendix had been removed. On pelvic examination, there was tenderness in the right adnexal region. There was some tenderness posterior to the uterus. The cervix was hard and somewhat hypertrophied, and both lips were somewhat eroded. The tenderness on abdominal palpation was mainly below the costovertebral angle and around to the right iliac region. This pain had been reproduced by right ureteral catheterization.

She was operated on, Sept. 17, 1932. Three light adhesions of the omentum to the anterior abdominal wall were noted. The sigmoid and the terminal ileum were lightly adherent to the posterior surfaces of the uterus and broad ligaments. The right tube and appendix were absent. The left tube and ovary were adherent to each other and to the sigmoid colon. When separation of the left tubo-ovarian mass was begun, a chocolate colored fluid appeared. What looked like a small mass of endometrial material was squeezed from the ovary, leaving an area about 1.5 cm. in diameter, the base of which contained a yellow area, probably corpus luteum. This diagnosis was confirmed by the pathologic examination. The adhesions were freed. The left tube was removed with its interstitial portion and the ovary was suspended to the left cornu of the uterus. A superior hypogastric resection was done. The follow-up notes on this patient show that she has been entirely free from pain since her operation. During April and May of 1933 she flowed excessively at the time of her periods and passed many clots. She went to the hospital, May 26, for a diagnostic curettage. The curettings showed chronic hyperplastic endometritis. Endocrine therapy is undoubtedly indicated.

There is no gross pathologic lesion to account for the pain in case 3. If a fibroid uterus or light adhesions per se were the causative factors, all women with such conditions present in the pelvis would suffer pain. This is known not to be so. Another factor not yet disclosed may be at work. It may be either a pelvic sympathetic supply, which is peculiarly susceptible to insult by extrinsic causes, or some lesion in the ganglions or nerves themselves.

In case 4 it cannot be conceived that the pain of which the woman complained was entirely due to the pathologic condition of the appendix. Resection of the plexus has no notable effect on pregnancy or parturition, according to reliable reports.

Patient 5 was relieved of her pain, yet nothing was done except the nerve resection and the removal of one ovary. She was seen at monthly intervals for four months and had not had a return of the distress.

In case 6 the pathologic condition that was present was on the left side of the pelvis, yet the pain of which the patient complained was on the right side and was undoubtedly of ureteral origin. As has been stated before, the main sympathetic supply of the ureters is in relation to the superior hypogastric plexus, and it may be presumed that for this reason she is now free from pain. The fact that the patient has begun to flow excessively does not coincide with the observations of Fontaine and Herrmann.[4] The pathologic report of hypertrophic endometritis seems to indicate that she is in need of endocrine therapy.

GROUP C

CASE 7.—P. L., a woman, aged 26, a nurse, married, complained chiefly of severe dysmenorrhea of a disabling character. She had had dysmenorrhea ever since she began to menstruate at the age of 14. Her periods had always been scanty, and for the past two years the dysmenorrhea had been of such a character that she was obliged to spend most of her time in bed during each period. These periods of disability were being so prolonged that she was unable to work at her profession; in fact, during and following her last menstruation she had been in bed nearly three weeks. She was very obese, being about 80 pounds (36 Kg.) over average weight. She had had all the usual medical treatment for the relief of dysmenorrhea and had come to the point at which opiates had to be administered by her physician during her disability period.

She was operated on, Oct. 2, 1932. The uterus was normal in size but both ovaries were markedly sclerotic. The left one was incised and was found to be of the consistency and appearance of a piece of very hard, white cheese. The left ovary was removed. The greater part of the right ovary was removed, a piece about 1 inch long, ½ inch wide, and ¼ inch thick being left. The superior hypogastric plexus was then dissected out and excised. Five days after the operation the patient noticed moisture in the bed and found that she was menstruating, having had no premonitory symptoms. One month later she again began to menstruate without warning. She noted that the amount of flow was as much during these two periods as she had ordinarily had in a year. Recent conversation with the patient discloses the fact that she is menstruating regularly every month and that she is entirely free from dysmenorrhea.

Case 7 is a typical example of a severe dysmenorrhea, showing that one may conserve ovarian function and yet have definite relief of pain. Attention is called to the economic feature in this case and in case 6.

OPERATION

Briefly, operation is done as follows: A midline incision is made extending from the symphysis pubis to or, better still, slightly above and to the left of the umbilicus. (An extreme Trendelenburg position aids greatly.) The pelvis is explored and any gross pathologic conditions are treated in the usual manner. The sigmoid and the small intestine are packed off. The bifurcation of the aorta is palpated, and the parietal peritoneum is picked up just below it and nicked with scissors. The area described under "anatomy" is laid bare. Then, with the aid of blunt right angled hooks, the fibers of the plexus are picked up and bluntly dissected with a small moist cotton ball on forceps.

This dissection is carried upward to the beginning of the plexus and downward to the beginning of the inferior hypogastric nerves. The bundle of nerve fibers is resected at these points. All communicating fibers are cut during the resection and the posterior parietal peritoneum is closed over the area.

In a certain percentage of cases, difficulty may be encountered because of the implantation of the mesosigmoid to the right; but a small nick in the right leaf, which is then enlarged by careful tearing rather than cutting, results in a good exposure of the interiliac trigon.

SUMMARY

1. The relief of pelvic pain and of functional dysmenorrhea followed the operation in seven cases of resection of the superior hypogastric plexus (presacral nerve), as practiced for several years by various European surgeons.

2. The results, as reported in the literature and from personal experience, indicate that there is a definite value in the procedure; in certain cases the procedure allows the conservation of female reproductive organs which have heretofore been sacrificed.

3. Complete examination of the patient from all standpoints and all known methods of relief short of the use of opiates, radiation and hysterectomy should be carried out before resort is made to sympathetic neurectomy.

CONCLUSION

The experience of American surgeons who have performed the operation of superior hypogastric neurectomy for other than painful conditions of the pelvis bespeaks its safety. Reports emanating from European clinics, along with personal experience, forces me to concur in the statement of Fontaine and Herrmann [4] that it is "a safe, simple, and efficacious way of interrupting these pathways in the treatment of the functional type of dysmenorrhea as well as a method of relieving other forms of severe pelvic pain."

Medical Arts Building.

ABSTRACT OF DISCUSSION

DR. J. P. GREENHILL, Chicago: All gynecologists come in contact with women who suffer excruciating pain as the result of grade 3 and grade 4 carcinoma. Up to the present time most of us have been giving these women large doses of opium derivatives. There are, however, two surgical procedures which can give these women immediate and long-lasting relief. One known as chordotomy, requires a knowledge of neurologic surgery. The operation consists in the removal of the laminae of the second, third, fourth and fifth thoracic spines and an incision in the anterolateral column, which, if it is not exactly placed, may not only fail to relieve the pain but may result in permanent paralysis of the legs. The second operation, sympathectomy, is a very simple operation and can be performed by any one trained in abdominal surgery. The indication for this operation is severe pain in the lower abdomen, in the back, and down the legs. Not all patients with inoperable carcinoma will be relieved of their pain by this procedure. If a woman has distant metastases, if she has pain due to involved glands pressing on the obturator nerve, or if there is pressure on the sacral nerves, this operation will not give the desired relief. Unfortunately, there is no way of detecting these three contraindications. However, since these three sources of pain are not common, most women who suffer from inoperable carcinoma of the cervix should be subjected to this operation, which entails practically no risk. Two months ago Dr. Herbert Schmitz and I reported a series of thirteen cases before the Chicago Gynecologic Society. All these patients had inoperable carcinoma of the cervix. I have performed ten of these sympathectomies for inoperable carcinoma of the cervix, two for bladder carcinoma and one for dysmenorrhea. I might say that in all thirteen cases the results were spectacular; all the patients had complete and instant relief from their pain. One word of explanation is necessary for the patient with dysmenorrhea. In spite of the glowing reports which appeared in the French literature, I have always felt that a laparotomy for dysmenorrhea is heroic treatment. However, one patient absolutely insisted on the operation when told about it. She had dysmenorrhea for fifteen years and spent from three to eight days in bed every single month. I performed the operation and she had a menstrual period in the hospital without any pain for the first time in fifteen years. Of course, part of this result may have been psychic. Furthermore, the patient has had only one period since the operation, so I cannot tell how permanent the results will be.

DR. CHARLES H. FRAZIER, Philadelphia: I am somewhat of an intruder in this section, but I venture to speak because I am interested in the relief of intractable pain from carcinoma of the pelvis. In my clinic since 1914 we have performed the so-called Spiller operation, i. e., section of the anterolateral columns of the cord for the relief of pain, and more recently we have tried the effect of the operation on the sympathetic system. Dr. Wetherell gave a rather pathetic picture of chordotomy. The exposure doesn't have to be as extensive as he intimated, and by the technic now practiced, complications may be avoided. How is one going to differentiate between cases in which the presacral nerve should be resected and those in which a chordotomy should be done? From an experience covering almost twenty years I can assure the patient that chordotomy will give relief. No one will dispute that a laminectomy as preliminary to a chordotomy is a little more formidable operation than a simple laparotomy as preliminary to a resection of the presacral nerve. Can one determine before hand which of the two radically different operations is indicated? About two weeks ago I operated on a patient of Dr. Floyd Keene's whose pain seemed to be confined altogether to the pelvic viscera. Since the afferent or sensory supply from the pelvic viscera passes through the presacral sympathetic nerve, the resection of this nerve in this particular case seemed clearly indicated. But when this terrific pain is referred, as it often is, to the back or the extremities, is it worthwhile even to consider a resection of the presacral nerve? All these patients have been suffering intolerable pain; most of them are more or less addicted to morphine. But I think it will be agreed that morphine is not the answer to pain in these cases. To patients who at the most may have only six months' expectation of life, one should be able in proposing any operation to guarantee relief from pain. I should like to know how Dr. Wetherell differentiates between the groups which should be operated on by his method and the groups which should be operated on by chordotomy. I should like to ask him whether, as after chordotomy, the results of sympathectomy are permanent; and one more question: from his own experience, has he found that a periarterial sympathectomy of the common and internal iliac veins, as proposed by Leriche, gives relief of pains referred to the back and the extremities? In the large majority of the patients on whom I have happened to operate, those are the pains of which the patient complains most.

DR. FREDERICK S. WETHERELL, Syracuse, N. Y.: This is the "creeping age" in the matter of sympathectomy for relief of pain. As Dr. Frazier has intimated, chordotomy has a definite place as a procedure for the relief of pain. The important point about chordotomy is that it must be done by an expert neurologic surgeon and, for that reason, many patients will be without relief unless they are transferred to centers where such expert service is available. Any competent surgeon, with special study, can perfect himself in sympathetic nerve surgery, and thus men throughout the country will be available for such work, provided, of course, it is found as time goes on that relief can be given by means of sympathectomy. Dr. Frazier asks as to the type of pain that may be relieved by sympathectomy and the type which may require chordotomy. Experience has shown that the cases in which the Head zones map out an area which indicates that the pelvic viscera alone are affected constitute the type in which relief might be expected by resection of the superior hypogastric plexus. When the pain is extensive and extends above the proper zones, the case would probably be one for chordotomy, although it must be remembered that strong impulses may jump several segments and in that way disturb one's observations. I feel that a superior hypogastric plexus resection might well be tried before chordotomy is resorted to, for the pain may be so modified that further work might not be necessary. In answer to the question regarding Leriche's operation of periarterial sympathectomy of the common iliac artery and external iliac artery, I feel the same, I suspect, as Dr. Frazier does; that is, that since the sympathetic distribution to the extremities is a segmental one, much may not be gained by this type of sympathectomy. However, if the pain in the lower extremities is close to the inguinal ligament, it is possible that a periarterial sympathectomy may be of some value. Care must be taken in selecting cases for sympathetic neurectomy and I doubt whether any one man at this time will have a large series of cases to report, especially as regards the classifications other than "advanced carcinoma." I would further urge those who are contemplating doing this type of surgery that they first familiarize themselves with the structures attacked, by study on the cadaver. It would be most unfortunate to have this work receive a setback at this time because some surgeon failed to pick up and resect the proper structures or did not resect a sufficient amount of nerve tissue. This I know has happened not only in pelvic but in other types of sympathectomies, and it is most unfortunate.

INDICATIONS FOR ENTEROSTOMY

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Enterostomy as a therapeutic measure in intestinal obstructive lesions and in the distention of peritonitis has been quite generally accepted by the majority of surgeons. There has not, however, been a universal agreement concerning its indications or complete accord in the interpretation of its results. The general impression is gained that the operation is frequently done as a last resort when little or no result may be logically expected. It must also be recognized that many patients, apparently treated successfully by enterostomy, might recover without drainage of the bowel if properly treated by modern supportive methods.

The logical use of enterostomy as a drainage operation involves some understanding of the pathologic changes and perverted function present in diseases associated with distention of the bowel. It has been quite conclusively shown that a bowel which retains its normal muscle tone and peristaltic activity does not absorb substances it should not absorb. If, however, blood supply to the bowel wall is damaged, the toxic content may reach the blood stream and produce symptoms.[1] After the bowel is paralyzed from overdistention, drainage of more than a short segment cannot be anticipated. If peristalsis is still active, drainage of the content of the small bowel may be expected, provided the enterostomy tube is functioning. Enterostomy is indicated to remove from the bowel its content of gas and liquid, not primarily to prevent absorption of toxic material but to prevent overdistention and paralysis.

Statistical studies have generally not shown that enterostomy decreases the mortality of intestinal obstruction and peritonitis.[2] Such statistics are of doubtful value, since they do not sufficiently consider that many enterostomies have been done as last resort operations when hope of adequate bowel drainage could not reasonably be entertained. It would seem that rather too much has been expected of enterostomy and not sufficient attention given to its indications and limitations.

The indications for intestinal drainage have grown less in recent years, since the chemical changes and disturbed physiology of the body, incident to obstructive lesions of the stomach and small intestine, are better understood. By maintaining the chemical and water balance, the tone of the intestine is in some degree improved. The use of morphine in adequate doses also increases the tone and rhythmic activity of the intestine. By these methods, overdistention is better controlled than formerly, thereby decreasing the indications for enterostomy.

High jejunostomy has received more than its share of commendation as a means of relieving distention of the upper part of the small bowel. It is very doubtful whether as much can be accomplished with a high jejunostomy as with an indwelling duodenal or stomach tube. With the latter, the stomach and the upper portion of the intestine may be frequently aspirated of its contents or may be continuously kept empty by light suction.[3]

A summary of indications for enterostomy may be listed as follows:

1. For acute intestinal obstruction as a preliminary operation.
2. As an adjunct to exploration and release of simple intestinal obstruction.
3. As an adjunct to resection of the bowel for volvulus or other strangulation.
4. After operative relief of intussusception.
5. For obstruction due to lower abdominal peritonitis.
6. For postoperative obstruction.

Undoubtedly, complete surgical relief of a mechanical intestinal obstruction is always desirable when the condition of the patient will permit such an operation without too much danger to life. Many times the patient is too ill for an extensive procedure and in such cases enterostomy is helpful as a part of the treatment preliminary to operative relief of the actual occlusion. Exploration of a complete obstruction should not be delayed following enterostomy longer than is absolutely necessary to control the distention and restore the chemical and water balance. I have had two patients who developed necrosis and perforation at the site of the obstruction within two days following successful ileostomy. Both patients died of a diffuse peritonitis. Following an operation for relief of an obstruction or resection of a strangulated intestine, enterostomy just proximal to the site of obstruction is indicated to aid in a rapid relief of distention and to protect the damaged intestine until function is restored. After reduction or resection of an intussusception, drainage of the small bowel is also an operation of choice.

Obstructions following operations on the lower part of the abdomen or secondary to pelvic peritonitis are usually best treated by enterostomy. It is frequently quite difficult to determine whether or not a true mechanical occlusion exists. Loops of intestine may be only temporarily thrown out of function by adhesions or infection. An enterostomy will often relieve the distention until the function of the intestine has been spontaneously restored, and no further operation will then be indicated. An exploration to relieve such an obstruction is usually accompanied by grave danger. If peristalsis is still active, as shown by inspection and auscultation, enterostomy is successful in a high percentage of cases.

If a generalizing peritonitis has developed, it is doubtful whether an enterostomy is of much value. Animal experiments have shown that life is not prolonged by enterostomy in the treatment of diffuse peritonitis.[4] In a series of eighteen patients, treated by enterostomy for peritonitis developing as a complication of intussusception, carcinoma of the colon, appendicitis, abortion, congenital anomaly, pelvic operation, ulcerative colitis and intestinal obstruction with perforation, all but one died. That somewhat ill defined group spoken of as paralytic ileus is usually not successfully treated by enterostomy. If an enterostomy is successful, the condition is not true paralytic ileus.

If proper function of an enterostomy tube is to be expected, it must be given constant attention. Frequent

From the University of Kansas School of Medicine.

Read before the Section on Surgery, General and Abdominal, at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 16, 1933.

1. Gatch, W. D.; Owen, J. E., and Trusler, H. M.: The Effect of Distention of the Bowel on Its Circulation and on Absorption from Its Lumen, Tr. Western. S. A., 1931, p. 521.

2. Van Beuren, F. T., Jr., and Smith, B. C.: The Status of Enterostomy in the Treatment of Acute Ileus: A Statistical Inquiry, Arch. Surg. **15**: 288 (Aug.) 1927. Shelley, H. J.: Enterostomy: A Consideration of the Literature, ibid. **25**: 943 (Nov.) 1932.

3. Wangensteen, O. H.: Therapeutic Considerations in the Management of Acute Intestinal Obstruction, Arch. Surg. **26**: 933 (June) 1933.

4. Orr, T. G., and Haden, R. L.: Enterostomy in the Treatment of General Peritonitis, Arch. Surg. **18**: 2139 (May) 1929.

injections of salt solution are indicated to maintain its patency. In selected cases, water and salt may be given through the tube to test the recovery of the bowel or to stimulate peristalsis.

The enterostomy technic of choice for drainage of the intact bowel is that described by Witzel, with a 16 or 18 French soft rubber catheter or a rubber tube of comparable size. When possible, the omentum should be interposed between the suture line in the intestine and the abdominal wall. Such an enterostomy seldom leaks and will quickly close when the tube is removed. All suturing of a distended intestine should be very carefully done to avoid tearing or pressure necrosis. Aspiration of the distended loop with a trocar before sutures and tube are placed will avoid soiling.

In general, it is best to place an enterostomy near the site of the obstruction. Frequently, however, the exact location of a small bowel obstruction cannot be determined with safety. Rather than subject an ill patient to extensive exploration, it is usually wiser to choose the first loop of distended bowel presenting through a right or left rectus incision and drain at that point.

CONCLUSIONS

1. High jejunostomy may be adequately replaced by an indwelling tube in the stomach or duodenum through which may be aspirated the stomach and regurgitated upper intestinal content.

2. In properly selected cases, an enterostomy is a valuable operation and may be life saving. It must neither be considered to be a court of last appeal nor be expected to bring back to life the moribund. There is a danger in too much dependence on enterostomy to the exclusion of more logical treatment.

3. Enterostomy cannot be successful if the intestine is paralyzed.

4. Enterostomy is indicated to drain a distended intestine of gas and liquid to prevent overdistention and not primarily to drain off toxic material within the bowel to prevent absorption. Absorption of toxins from an obstructed bowel does not begin until the circulation of the bowel wall is impaired, after which enterostomy is usually unsuccessful.

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ABSTRACT OF DISCUSSION

DR. W. D. GATCH, Indianapolis: I wish to express agreement with all of Dr. Orr's conclusions. I have been interested in the study of the effect of distention of the bowel on the circulation through the bowel wall and on absorption from its lumen. I have demonstrated that gangrene of the bowel can be produced by distention alone without interference with its mesenteric circulation. In intestinal obstruction, distention of the bowel is the one condition that must be relieved, as Dr. Orr has emphasized, before the bowel is paralyzed and unable to move its contents of gas and fluid to the enterostomy tube. In cases of advanced obstruction from any cause, enterostomy will be of value if audible borborygmi are still present. If none can be heard, it is probably too late to hope for benefit from the operation. However, I think that even in these extremely advanced cases the operation should be done; it may do some good. The modern, nonleaking, aseptic enterostomy is one of the most useful of operations. Its use in advanced appendicitis will greatly diminish the death rate. It will also rescue many neglected cases of mechanical ileus. I have been doing enterostomy in advanced appendicitis for a number of years. I find that it is not necessary in many cases, even when the case is seen at operation to be far advanced. I rarely do an enterostomy at the time of appendectomy. I watch the patient's course after operation very carefully and listen to the abdomen at frequent intervals. As soon as the patient vomits material that has an odor I at once consider the possibility of enterostomy. I find it a great help to take a flat plate of the abdomen at that time to see the gas patterns. If the plate shows loops of small bowel which have a diameter of from 2½ to 3 inches, I think enterostomy should be done at once. It should be done at a time when one still hears good, loud borborygmi. My results under these conditions have been uniformly good. The advantages of the Witzel operation are that it can be done without risk under local anesthesia even on a moribund patient and that it requires no secondary operation to close the opening in the bowel.

DR. J. SHELTON HORSLEY, Richmond, Va.: One of the most valuable contributions to the study of intestinal obstruction in the last two decades has been made by Dr. Orr and his associates. His accomplishments have been both negative and positive. He has shown the necessity of preventing the marked fall of blood chlorides in high obstruction and this by giving salt. The negative contribution has been exploding the theory of a specific toxic material as the cause of the symptoms of obstruction. Dr. Gatch has called attention to another indication for enterostomy, that of feeding, but enterostomy in obstruction finds probably its most important field, especially in postoperative obstruction. Lymphatic adhesions coming on a few days after operation usually clear up in a week or two but in the meantime enterostomy is demanded. Obstruction that occurs long after an operation, a month or more, or without any operation, should be thoroughly explored, because not infrequently beginning gangrene or a volvulus or some other lesion exists that could not be recovered from without a radical procedure. Enterostomy in these cases, however, is extremely valuable as an adjuvant because if there is marked distention there is also an impairment of peristalsis, and even though the obstructive lesion may be removed the bowel may not be able readily to empty and has to be helped along. In addition to absorption from the intra-intestinal pressure, it must be remembered that in peritonitis there is also peritoneal absorption. With a septic exudate in the peritoneal cavity, the pressure of the distended bowel will force into the peritoneum more of the toxic material from the peritonitis than if the bowel were not distended. So enterostomy has an indication to relieve not only the intra-intestinal pressure but the external pressure as well. The oblique enterostomy with a tube is usually excellent in obstruction. When, however, it is necessary to do an enterostomy in order to rest the colon, as in the multiple stage operation on the colon for malignant conditions, I think the best thing is to bring up through a muscle-splitting incision the ascending colon onto the abdominal wall, put a glass rod under it, probably suture in a catheter for a day or two, and then incise the cecum, so that absolutely all the intestinal contents are voided through the enterostomy and complete rest is given the distal colon. In two or more weeks a resection is done, and in the third stage the enterostomy is closed. In the technic of Dr. Orr, the catheter is transfixed with the last external intestinal suture. This may be a potential source of infection, for it is not fully protected from the peritoneal cavity. I place a purse-string suture, perforate the intestine within its grasp, close the purse-string suture, and then transfix the catheter with the end of the purse-string suture. The catheter is then buried by a row of sutures and the point of transfixion is thus fully covered. After this is done a fine catgut suture placed just where the catheter emerges from the bowel is passed through the parietal peritoneum. There is then no necessity of bringing the omentum over the enterostomy, and the operation seems to be about as safe from the production of peritonitis as it can reasonably be.

DR. GEORGE A. HENDON, Louisville, Ky.: Statistics have appeared in the literature which seemed to indicate that more patients die when enterostomies have been performed on them than when in similar circumstances these were not done. It is also an indisputable fact that more patients die on whom medical consultations have been held than those who had no medical consultations, for the simple reason that in most cases consultations are resorted to after the battle is lost. If enterostomies were performed at the right time there would be

a very material and striking change in the mortality statistics. By the right time I mean the time when the primary operation is performed. I think that surgeons should have judgment enough to select the cases in which an enterostomy would be of advantage. Because I did not possess that judgment, I have gone to the trouble of devising an operation that is so simple that if it does not do any good it surely cannot do any harm. Dr. Rankin was kind enough to include an illustration of this operation in the new work on the colon and rectum, by Rankin, Buie and Bargen. Any operation that contemplates the transfixion of an intestinal wall to a rubber tube is mechanically unsound, for the simple reason that it is a fundamental principle that when substances of unequal density are bound together the one with the least density will yield when there is any stress or strain exerted on it. Most of the intestines requiring enterostomy have disintegrated walls, and the slightest tension will produce a tear, through which leakage will occur. When convalescence is established the catheter can be removed if it comes out easy, or it can be cut off even with the abdominal wall and dropped inside the bowel to be evacuated through natural channels. I recommend this operation because it is simple and one need not hesitate to do it in doubtful cases. It never leaves a fistula.

ECTOPIA LENTIS

WITH REPORT OF A CASE OF TOTAL DISLOCATION, DIRECTLY DOWNWARD

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Ectopia lentis is a congenital displacement of the crystalline lens of comparatively rare occurrence; it must be distinguished from the acquired dislocations which develop spontaneously or as the result of trauma. Ectopia of the lens is ordinarily bilateral and symmetrical in both eyes. Knapp's [1] statement of its occurrence as approximately 1 in 5,000 cases denotes the rarity of the condition. The oldest reference found in the literature pertaining to ectopia is that of von Graefe,[2] who, in 1854, described the condition and called particular attention to its hereditary nature. The German and the English schools are amply represented in the early reports, the former by Stellwag von Carion's paper,[3] which appeared in 1856, and Sippell's [4] book, which was published in 1859; the latter by Dixon's [5] report in 1857 and Jeaffreson's [6] report in 1871. Although articles have appeared almost yearly since these early dates, they have failed to include a comprehensive bibliography.

The strong hereditary tendency in ectopia lentis is well emphasized by several authors. Morton [7] recorded its occurrence in five successive generations comprising ten persons. Lewis [8] found sixteen cases in six generations of one family. Adams (quoted by Folk [9]) reported observation on a family of nine children, seven of whom had dislocated lenses. Cameron,[10] reporting on four successive generations, found fourteen persons affected, of whom only one was a male. In regard to transmissibility, Folk [9] stated that of marriages between twenty-two affected and nonaffected parents, seventeen offspring were affected, proving a ratio of almost three to one. It is believed that the condition is more common in Anglo-Saxons than in persons of the Latin race, and also that a majority of the patients are intelligent and of good health, with the possible exception of other associated congenital diseases of the eye.

Several theories have been advanced concerning the causative factors of ectopia. These are reviewed in Kennedy's excellent paper.[11] He stated that most observers concur with the theories first offered by von Graefe and Quaglino with reference to a developmental defect in the suspensory ligament. This defect is occasioned by a faulty or delayed closure of the ocular cleft. In considering the stages in development of the suspensory ligament, it may be recalled that the primitive lens remains in contact laterally with that portion of the secondary optic vesicle subsequently destined to become the ciliary body. The lens becomes encircled by a fibrovascular sheath which forms adhesions from contact with a portion of the secondary optic vesicle. As the eyeball enlarges, it does so at a greater rate than the lens. Consequently, that portion of the ciliary body which was in contact with the lens grows away from it, and the adhesions previously formed between them become stretched, to become the delicate fibers of the suspensory ligament. In explaining an upward dislocation, it may be assumed that the absence of fibers of the zonule of Zinn in the inferior region offers no resistance to the pull upward on the lens. According to the theories of Hess and Treacher Collins, displacement may also be occasioned when the adhesions between the ciliary body and the margins of the lens are denser and less elastic on one side than on the other, so that they expand less readily than the opposing ones. This would account for the cases of ectopia in which the fibers of the suspensory ligament are seen in the aphakic area. Another etiologic factor may be that of traction of the hyaloid artery and bands in the vitreous. Badal and La Grange believe that all such eyes are myopic and the lens is too small for the space it should occupy. As a result, the overstretched zonula yields and the lens is displaced in the direction of least resistance. However, contrary to this belief of a small lens, Lindner (quoted by Parsons [12]) has reported four cases in which the lenses were larger than normal.

In reviewing the causes of developmental anomalies, Collins and Mayou [13] aptly stated, "At present we are unable to say what causes the usual orderly cycle of transformations which ensue after the fertilization of the ovum and consequently, frequently unable to account for disorderly occurrences in that cycle. It is perhaps more surprising that such a complicated structure as the eye should so often develop in a uniform way than that occasional irregularities should occur." Relative to ectopia, the work of biologists such as Guyer, Stockard (quoted by Kennedy [11]) and others becomes sig-

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nificant. It is known that during the second week of embryonic development, the primary optic vesicles become differentiated, appearing as offshoots from the forebrain. Ideas differ as to how this is brought about. Stockard, from his experiments, believes that the cells responsible for the formation of the eyes have their origin in the median plate of the central nervous system. By excising a portion of this structure, he could prevent the formation of eyes. Early removal of a lateral portion of the plate, however, did not prevent formation of eyes nor displace the optic vesicles, which were found to be situated laterally as usual.

By exposing fresh fish eggs to heat, cold and chemical fumes, Stockard found that he was able to obtain arrest of development of the optic vesicles ranging from cyclopia to essentially normal eyes. The end-result depended on the period of development at which the inhibiting agent was introduced.

Guyer pulverized rabbits' lenses and injected them into fowls. When serum of these lens-sensitized fowls was next injected into pregnant rabbits, the offspring showed abnormalities such as coloboma of the iris and choroid, cataracts and displacement of the lenses, together with variations in the size and situation of the globe. By mating these defective rabbits, he obtained progeny with abnormalities which tended to increase in suceeding generations. He has succeeded in carrying a defect through nine generations and believes that when once obtained, the defect can be transmitted indefinitely.

In ectopia lentis, the direction in which dislocation may occur varies and, as stated heretofore, is usually symmetrical in the two eyes. Of seventy-three cases reported by Dorsch,[14] displacement upward in both eyes occurred in thirty, up and out in eighteen, up and in in eight, down in five, inward in four, outward in three and down and out in one. In one case the right lens was inward, while the left one was down and in. Three cases showed asymmetrical displacement. Two of these showed the right lens down and out, while the left was down and in. In the third case, the right lens was down and in but the left was up and in. Collins and Mayou[15] stated that displacement never occurs directly downward, although in one of Adams' cases, mentioned by Hardy,[16] such a dislocation is described. In 1874 Page[17] reported a case of unilateral ectopia lentis.

The edge of the lens in ectopia may or may not occupy the pupillary region, its margin being seen in certain instances only after dilatation of the pupil. The existence of ectopia lentis may be suggested primarily by the accompanying iridodonesis. In large pupils which reveal an edge of the lens, this aperture is divided into an aphakic and a phakic portion with a resultant monocular diplopia. The anterior chamber is deepest on the aphakic side, the side from which the lens is displaced. By reflected light, the edge of the lens appears as a dark crescent, owing to the prismatic refraction. In many cases the suspensory ligament is completely absent in the region corresponding to the aphakic area, the lens being dislocated away from the point of the absent zonule. Absence of the suspensory ligament produces a movable lens which may push forward and interfere with the passage of fluids through the pupil and thus produce a rise in tension. Isnel, Deschamps and Clerc[18] reported such a condition in two sisters presenting congenital dislocation of the lens accompanied by glaucoma. Iritis may result from the migration of the lens into the anterior chamber. Allport and Smith[19] noted a case of bilateral luxation of the lens in which this structure was entirely unattached and would float freely through the dilated pupil into the anterior chamber or return to its fossa according to the position of the child's head. As seen with the ophthalmoscope, the curved edge of the lens is not always regular, but may show slight depressions or elevations. The depressions in the border may amount to a notch, constituting a coloboma of the lens, as reported by Clark[20] and Giri.[21] Other associated defects which may occur with ectopia lentis are coloboma of the iris, usually in the opposite direction, corectopia, irideremia, nystagmus and a persistent hyaloid artery. Crebbin[22] reported a case of congenital dislocation showing opaque lenses and a persistent pupillary membrane. The lenses, however, are usually clear in ectopia lentis in contradistinction to the loss of transparency seen in traumatic dislocations.

Corrective measures for ectopia lentis consist primarily in refraction and secondarily in surgical treatment in appropriate instances. The refraction in typical cases is myopic owing to the unopposed elasticity of the lens. This is well illustrated in a case reported by Hess (quoted by Parsons,[12] which presented a myopia of 15 diopters in the phakic area, while the aphakic area measured plus 10 diopters. Clark,[20] who studied the refraction in a series of cases over a period of years, found that the myopic component remained stationary. There was, however, a periodic variation in the cylindric correction owing to changes in the lenticular astigmatism. This was due, in his opinion, to a shifting of the lens in its hyaloid fossa. The results of refracton are, however, for the most part disappointing because of the accompanying amblyopia, a finding commented on by Jeaffreson[6] as early as 1871.

The surgical problems include needling or extraction of opaque ectopic lenses and the relief of secondary glaucoma. Needling entails transfixation of the lens by a second needle while a capsulotomy is being performed. Isnel, Deschamps and Clerc[18] have reported cases of glaucoma in which the patients were successfully treated by sclerocorneal trephine. The use of Heine's cyclodialysis may be considered in appropriate cases.

The following case is reported not only because of the general rarity of ectopia lentis, but more particularly because of the unusual displacement directly downward. As previously noted, Dorsch[14] found only 5 such instances in a total of 73 cases. Assuming that ectopia lentis occurs once in 5,000 cases (Knapp[1]) and that only 5 in 73 are dislocated downward, the incidence of the case reported would appear to be about 1 in 73,000. Some authors apparently do not follow Dorsch's statistics (1900), for as late as 1911 some authorities deny that congenital dislocation ever occurs directly downward.

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REPORT OF CASE

History.—L. L., an American boy, aged 10, was seen in consultation at the San Francisco Hospital in February, 1932, while under treatment for osteomyelitis of the femur. Poor vision and tremulous irises were noted during the general physical examination. Only the condition of the eye will be described here.

The parents were Italians and were living and well. One brother, aged 6, was normal. No congenital deformities were known in the parents' families.

The patient's birth was normal. He had no illness until 9 years of age, when osteomyelitis of the left femur required hospitalization for nine months. At the time of examination he walked without a crutch. There was no history of injury or accident. The Wassermann reaction was negative. He was noted as a baby to hold objects very close to the eyes. He first wore glasses at the age of 7. He was in the 4 A grade sight-saving class, and made satisfactory grades.

Ocular Examination.—Vision in the right eye was limited to the perception of fingers at 13 feet; with + 10.00 sph. ⌒ + 2.50 cax. 90°, vision was 0.3. Vision in the left eye was limited to the perception of fingers at 8 feet, with + 10.00 sph. ⌒ + 3.00 cax. 100°, vision was 0.3. Examination for near vision showed: J. 1.50; with correction and + 3.00 add J. 75, in the two eyes.

Neither eye showed injection. The movements of the eyes were normal. The pupils were equal and regular, but were slightly oval in the vertical diameter. They reacted normally to light, and showed a slight but definite reaction to convergence. There was coarse iridodonesis in each eye when the patient looked to the side. The anterior chambers appeared of similar depth throughout. The right eye showed a flagellum-like strand of persistent pupillary membrane attached to the lesser circle of the iris. It was not present on the left. The irises showed no coloboma. Tension (Schiötz) was 20 mm. in both eyes.

Examination of the Fundi.—The right eye showed fine, floating, dustlike vitreous opacities. The lens was completely subluxated directly downward; no margin of the lens was seen in the pupil. About two thirds of the upper circumference of the lens was visible, appearing to be at the level of the ciliary body. The edge appeared regular and pigmented and contained a few dark fringelike strands which looked gray under direct illumination and which extended free into the vitreous. The lens appeared perfectly transparent, retinal vessels being clearly seen through it, and was in the erect position. It oscillated with the vitreous, but assumed a constant position in relation to a particular retinal vessel which was used as a reference point. With the head tipped backward over the edge of a table, the lens still remained below the pupillary margin.

The fundus details were quite clear. The disk was oval in its vertical diameter and was sharply demarcated except temporally, where there was a lighter crescent about one-half disk diameter in width; nasally there were a few flecks of pigment belonging to the choroidal ring. The retinal vessels appeared normal. The macula contained numerous yellowish areas of depigmentation, some of which appeared streaklike in a horizontal direction. There were also occasional dotlike pigment deposits, which, together with the depigmentation, established the diagnosis of old, central chorioretinitis. The peripheral fundus was clear.

The left eye showed an identical vitreous. The dislocation of the lens was similarly directly downward, but a trifle lower than on the right. Its edge appeared clean cut, regular and dark but contained no grayish fringe, which was so noticeable on the right. It was equally transparent and erect. With the head tipped backward over the edge of a table, however, the upper edge of the lens became just visible in the pupillary area, but returned to its original position when the patient assumed the erect status.

The disk was oval vertically and had a similar temporal cresent, showing choroidal vessels and a few pigment granules. The macula showed some increased pigmentation but no definite lesions.

One was unable to see any part of the lens by the slit lamp. Perimetric fields showed no appreciable defect. Color vision and gross stereoscopic vision were normal. The ophthalmometer readings were: right eye, 87° ± 3.50; left eye, 100° ± 3.25.

Refraction was typically aphakic:

R. E. + 10.00 sph. ⌒ + 2.50 cax. 90° V. 0.3 partly.
L. E. + 10.00 sph. ⌒ + 3.00 cax. 100° V. 0.3 partly.
Add. + 3.00 J. 75 O. U.

Since this result was at variance with the old glasses, a new prescription was given with a plus 3.00 added in a ground bifocal. The patient had previously been wearing a + 9.00 sphere with + 1.75 cax. 90° for both eyes.

During the past year the patient has made a noticeable improvement in school work (sight-saving class); he is quite comfortable with the bifocals. Corrected vision is now 0.4 partly in each eye and J. 62.

SUMMARY

A case of congenital, bilateral, total dislocation of the lens is reported in a boy of 10, the dislocation being directly downward. This position is stated to be exceedingly rare by most authors, while its existence is denied by some. It is accompanied by an old monocular chorioretinitis and a partial persistent pupillary membrane but by no other congenital anomalies, nor by glaucoma.

In order to overcome the aphakia, bifocal lenses were prescribed and have been successfully worn for the past year, with definite improvement in both distant and near vision.

384 Post Street.

ABSTRACT OF DISCUSSION

DR. WILLIAM ZENTMAYER, Philadelphia: This, I believe, is the first time since 1898 that this subject has been brought to the attention of the section. The outstanding feature of this anomaly is its hereditary and familial tendency. Instances even more striking than those noted by the authors have been reported. R. M. Gunn records its occurrence in seventeen members of five families of twenty-two children. Dehenne and Baillart report a history of four generations affected in which all the six descendants of the first showed double luxation. There are a number of similar case histories in the literature. The descent seems not to be of like nature in all cases. Gunn states that in his case it was not a mendelian recessive. In two families it acted as a pure dominant. In Francheschetti's case it was a recessive hereditary condition manifested through consanguinity, while Kotlarveskaid, basing his observations on thirteen cases, considered it of a hereditary dominant type. Whatever the genesis of the condition may be, two factors are significant: the occurrence at times of a coincident corectopia, and the frequent association of myopia, 60 per cent. The first would indicate the persistence of a mesodermal strand as the cause of both anomalies, and the latter a stretching of an inherited weak zonule, as the more the eye stretches the more the fibers are stretched. This probably accounts for the fact that the ectopia increases with time and in many instances becomes a complete luxation (Rotth). The myopia is not in every case axial but, as stated by the authors, may be lenticular. In one of my cases the fundus presented myopic changes. Butler, Mesmann and Hegner report instances of downward dislocation. In a number of cases there was a deformity of the skull, sometimes associated with impaired mentality. Operation, when called for by secondary glaucoma or because of cloudiness of the lens, presents difficulties. The statement that needling entails transfixation is a correct generalization, but in individual cases needling, as ordinarily done, has been successful. I have notes of only two cases in which operations were performed. In 1926 I operated on a girl, aged 7 years. The lenses were dislocated downward and inward and were cloudy. Three discissions were performed on the left lens and absorption resulted. The second case was that of a boy, aged 16 years. The lenses were dislocated downward and inward. There was noncongestive secondary glaucoma. A simple extraction with a loop was safely accomplished in the left eye with a resulting active round pupil. Visual acuity equaled 6/20. As a result of this success, the other eye was similarly operated on and lost through iridocyclitis resulting in atrophy of the globe.

VITAMIN B DEFICIENCY AND THE ATROPHIC TONGUE

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Glossitis with atrophy of the lingual papillae to ultimate baldness constitutes a conspicuous manifestation of a number of diseases. Recent occasion [1] has been taken to review this subject. Among the conditions in which the atrophic tongue has been described are pernicious anemia, achlorhydric anemia, anemia of pregnancy, pellagra, sprue, Plummer-Vinson syndrome, malnutrition attended by dysentery and anemia, intestinal stricture, pyloroplasty complicated by peritonitis, Dibothriocephalus latus infestation and achlorhydria. In the quest of an explanation for this interesting phenomenon such an array of conditions may be confusing; yet it offers certain points of logical attack on the problem of pathogenesis.

For a long period the infectious background of the glossitis of pernicious anemia was accepted on the basis of the work of Hunter [2] and of Schneider and Carey.[3] Later, Wilkinson and Oliver [4] and Oatway and Middleton [5] observed a definite relationship between the incidence of achlorhydria and glossitis. Witts,[6] on the other hand, pointed out that, whereas gastric anacidity was the usual concomitant, cases of anemia and malnutrition were available in which the glossitis appeared with normal gastric acidity. Minot and

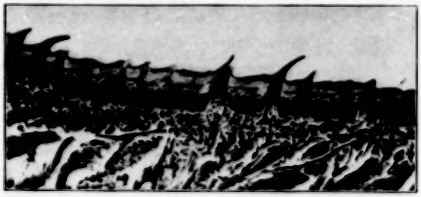

Fig. 1.—Section of rat tongue after thirty-nine days on a vitamin B deficient ration. (Courtesy of Dr. Gorton Ritchie.)

Murphy [7] reported the complete remission in the glossitic manifestations of patients with pernicious anemia receiving liver. Isaacs, Sturgis and Smith [8] noted mild recurrences of glossitis even while the patients were on liver therapy. Hence they concluded that "liver does not seem to be entirely specific for this symptom." The inclusion of sprue and pellagra among the diseases characterized by the atrophic tongue immediately suggests the possibility of a deficiency explanation for this manifestation in the entire group. Moersch and Conner [9] invoked a dietary background for the changes incident to "hysterical dysphagia." Ungley [10] called attention to an obvious parallelism between pellagra and pernicious anemia in their common glossitic and gastro-intestinal manifestations. He concluded that these symptoms in pernicious anemia might well result

Fig. 2.—Section of normal rat tongue. (Courtesy of Dr. Gorton Ritchie.)

from a metabolic disturbance or from a deficiency rather than from an infection.

Castle's [11] epochal work advanced sound evidence that, as a rule, the actual fault in pernicious anemia resides in the subject and not in his diet. An absence of the intrinsic factor in the gastric juice of patients with pernicious anemia renders them incapable of assimilating from the diet certain elements necessary for orderly erythropoiesis. Later Strauss and Castle [12] concluded that the extrinsic factor "may now be defined as a substance closely related to vitamin B_2, if not vitamin B_2 itself." Interestingly, Gerstenberger [13] had previously observed a favorable response of aphthous and ulcerative stomatitis to water soluble vitamin B. Two of his reported cases showed an acute glossitis which likewise improved under this therapy. Lewis's [14] survey of this subject was most comprehensive and he concluded that the smooth tongue in all probability represented a deficiency manifestation. He made a further important observation in a patient with sprue who presented the blood picture of pernicious anemia. The tongue of this patient was normal and the gastric juice contained free hydrochloric acid, pepsin and rennin. However, when this gastric juice was incubated with 200 Gm. of beef and fed to a pernicious anemia patient, no remission occurred in the blood picture. The product of the interaction between normal

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13. Gerstenberger, H. J.: The Etiology and Treatment of Herpetic (Aphthous and Aphtho-Ulcerative) Stomatitis and Herpes Labialis, Am. J. Dis. Child. **26**: 309 (Oct.) 1923.
14. Lewis, G. E.: The Smooth Tongue: A Study in Deficiency Disease, Practitioner **125**: 749 (Dec.) 1930.

gastric juice and beef, on the other hand, subsequently induced a prompt reticulocyte response in the same patient. Lewis concluded that the absence of the intrinsic factor did not explain the lingual atrophy.

The deficiency theory seemed the most fruitful point of attack on the problem, and at the time of the institution of the experimental study (December, 1931) it was deemed logical to investigate the influence of vitamin A deficiency on the tongue because of the evidence of an infectious background adduced by Hunter,[2] and by Schneider and Carey.[3] A Pavlov pouch was prepared in a dog's stomach by Professor J. A. E. Eyster to render frequent determinations of the gastric acidity possible. After certain inconsequential preliminary studies, a biopsy of the dog's tongue was taken, Feb. 16, 1932, and the animal was placed on a diet deficient in vitamin A for a period of three months. A second biopsy was then taken and no microscopic changes were observed in the surface markings or in the deeper structures of the tongue.

Fig. 3 (case 1).—Tongue prints; *A*, before treatment; *B*, after high vitamin B diet.

Fowls were suggested as the most available experimental subject for vitamin B studies; but certain technical difficulties presented themselves, particularly in the osseous tissue in the chicken's tongue. Accordingly, the rat was the next choice by reason of the highly serrated papillae that characterize the anterior two thirds of the dorsum of the tongue. Through our colleagues in the department of agricultural chemistry, materials have been made regularly available after varying periods of standard vitamin B deficient rations. A number of rats were fed on a low vitamin B diet.[15]

Fig. 4 (case 2).—Tongue prints: *A*, before treatment; *B*, after parenteral liver extract.

After a period of thirty-nine days, and earlier in certain instances, these rats were observed to become scrawny and malnourished and to manifest polyneuritic symptoms. The tongues of these animals presented a smooth and bald appearance as compared to the normal rat, whose papillae give the tongue a finely stippled, uneven appearance. The rats were killed. The characteristic microscopic picture is conveyed in figure 1. A section of the normal rat tongue is shown in figure 2 for comparison. Without exception there has resulted a marked degree of papillary atrophy, and this change has advanced to virtual effacement in certain instances. In areas of some tongues, denudation by ulceration has occurred. To check these observations a second group of rats was fed a similar low vitamin B diet over a period of from ten to eleven weeks. The microscopic studies of the tongues of this group revealed changes similar to those in the first group. A third group of young rats was fed a similar diet for the same length of time, and it is interesting that these rats developed a lesser degree of lingual atrophy than did the older rats for the same period of B deprivation. It is interesting that the round-cell infiltration and fibrosis of the tongue in pernicious anemia has not been completely reproduced in this experimental series. The time factor may enter into this discrepancy in the picture.

The clinical study of the atrophic tongue has been closely pursued for the past three years.[16] Tongue prints on smoked paper have afforded permanent records of the progress of this condition under varying forms of therapy. Accordingly, following the same technic,[5] it was possible to evaluate the clinical application of the experimental evidence of a vitamin B deficiency in atrophic glossitis.

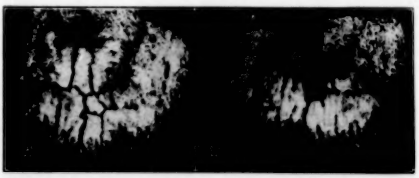

Fig. 5 (case 3).—Tongue prints: *A*, before treatment; *B*, after parenteral liver extract.

Case 1.—The first patient encountered in this study presented the classic picture of pernicious anemia. His tongue showed marked atrophy with flattening of the fungiform and filiform papillae anteriorly but was not completely bald. A tongue print was taken (fig. 3 *A*) and the patient was placed on a high vitamin B diet supplemented by one compressed yeast cake twice a day. For the period from Jan. 27 to Feb. 8, 1933, this regimen obtained and liver therapy was withheld. The blood count underwent a slight slump (from 2,270,000 to 1,920,000 erythrocytes) but there was an appreciable regeneration of the papillae, and the normal tongue markings were almost completely restored in this short time (fig. 3 *B*). The hematopoietic response on the initiation of liver therapy was prompt and satisfactory.

Case 2.—A patient with pernicious anemia showing similar lingual atrophy was placed on a high vitamin B diet without liver. As demonstrated in the tongue prints taken on admittance (fig. 4 *A*), there was flattening and atrophy of the papillae over the anterior two thirds. After two weeks' time there was no appreciable change in the gross appearance of the tongue or in the prints. The subsequent addition of diluted hydrochloric acid effected no apparent benefit over a further period of ten days. As demonstrated by the tongue print (fig. 4 *B*), a slow return of papillae ensued on the addition of liver therapy in the form of a parenteral extract; but it did not parallel the hematopoietic response.

15. At present, a group of rats is being fed a low vitamin B_2 diet in an attempt to assign the specific responsibility for the atrophic glossitis. After the completion of our observation on the effect of vitamin B deprivation, the preliminary report of Miller and Rhoads in the experimental production of sprue in dogs fed on a vitamin B_2 deficient diet appeared. (Proc. Soc. Exper. Biol. & Med. **30**: 540 [Jan.] 1933) and gave conclusive evidence of a glossitic reaction to this deficiency with ultimate papillary atrophy of a marked degree. Such evidence as our experimental studies on vitamin B_2 deficiency in the rat may reveal will constitute a further report.

16. Middleton,[1] Oatway and Middleton.[5]

CASE 3.—A patient with pernicious anemia presented an atrophy of the lingual papillae in the anterior and central portion of the dorsum on admittance (fig. 5 *A*). The tongue was sensitive to touch. His condition was too precarious to defer liver support, but an effort was made to maintain a low vitamin B diet. The response of the erythropoietic centers was brilliant. On the fourth day after 20 cc. of liver extract intramuscularly (equivalent to 100 Gm. of whole liver), the reticulocytes rose to 14.8 per cent and the succeeding day reached 35 per cent. By the sixth day there was early evidence of regeneration in increased prominence of the fungiform papillae. Virtual normality of the gross appearance in the tongue was attained by the eleventh day. The tongue also lost its sensitiveness (fig. 5 *B*).

Clearly, certain divergences present themselves in this group of three cases of pernicious anemia. The prompt response of the glossitic manifestations of the first case on a high vitamin B intake without specific therapy directed toward the underlying anemia bespeaks a pure deficiency background. In the next two cases, however, other circumstances arise. In the second no response was observed on a high vitamin B diet; but the slow response on a low vitamin B diet intake with coincident liver therapy suggests a conditioned deficiency, in which event the absorption or assimilation of the lower B intake may be rendered more adequate by liver extract. The initial trial of a high vitamin B intake without liver was denied in the third case, but a similar explanation to that advanced in the second case may apply here. Finally, in both instances the parenterally administered liver extract may have had an independent action. West [17] has reported the presence of vitamin B_2 in liver extract.

CASE 4.—An unusual situation presented itself in this patient, who was admitted for the study of a grave anemia that had responded to desiccated hog stomach before entrance to the hospital. The case proved to be one of gastric polyposis presenting a completely bald tongue, achlorhydria and hypochromic anemia (38 per cent hemoglobin and 3,080,000 erythrocytes). The surface of the tongue was smooth and glistening; figure 6 shows an absence of the papillary markings. The patient was given a high vitamin B diet without liver but supplemented by one compressed yeast cake twice a day. In six days there appeared a series of innumerable pin-point white dots on the tongue; and when it was dried, these were shown to be slightly elevated above the surface. Unfortunately, these changes could not be demonstrated by the tongue prints. Further observation was rendered impossible by the discharge of the patient; but this apparent response constitutes the earliest in our experience.

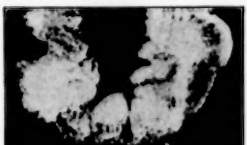

Fig. 6.—Tongue print showing complete lack of papillary markings.

CASE 5.—A patient with advanced ulcerative pulmonary tuberculosis suffered from intermittent diarrhea dependent on ileocecal tuberculosis. The tongue was completely bald (fig. 7 *A*), and a hypochromic type of anemia prevailed (52 per cent hemoglobin and 5,150,000 erythrocytes). The gastric acidity registered 18 degrees of free hydrochloric acid. On a high vitamin B diet with added compressed yeast, regeneration of the lingual papillae occurred whenever the diarrhea could be controlled for a few days. The first evidence of regeneration was noted in the middle third of the dorsum of the tongue with the appearance of flat fungiform papillae (fig. 7 *B*). A reinstitution of the diarrhea was early followed by the relative denudation of the tongue (fig. 7 *C*). Several cycles of this order were observed.

17. West, Randolph, cited by Strauss and Castle.[13]

Such prompt fluctuations in the lingual markings incident to the enteric state argue against a neurogenic explanation of the former. Apparently the factor of absorption conditions this deficiency in the presence of an adequate vitamin B intake.

These characteristic experiences lead to the conclusion that the atrophic tongue is dependent on a vitamin B deficiency. Experimentally, the condition has been regularly reproduced in rats on a vitamin B deficient ration. Clinically, the problem is not as clear cut. Instances of pure vitamin B deficiency will respond to an excess of the lacking substance. If the deficiency is conditioned by factors of impaired absorption and assimilation, the addition of the deficient vitamin to the diet may not be sufficient in itself to overcome the basic fault.

Fig. 7.—Tongue prints: *A*, before treatment; *B*, after a high vitamin B diet; *C*, high vitamin B continued but relapse in enteric condition.

The work performed by Ivy and his associates [18] on experimental gastrectomy establishes the narrowing of the margin of safety in erythropoiesis by this surgical procedure, so that anemia develops regularly in such animals under the strain of pregnancy. Analogous conditions may exist in pathologic states of the gastrointestinal tract to explain the improper assimilation of vitamin B, which is apparently required to maintain the normal lingual papillae. Certain evidences of minor relapses have been reported by Isaacs [19] in patients with pernicious anemia receiving liver therapy. These symptoms include, among others, glossitis, anorexia, diarrhea and constipation. The fact that such relapsing manifestations occur seasonally (March most frequently) suggests a vitamin responsibility and indicates further a decidedly reduced reserve. Lastly, the apparent inconsistency of papillary regeneration on the parenteral injection of liver extracts after the failure of a high vitamin B diet alone to induce such a change may depend on the presence of vitamin B_2 in the liver extract or on an improved assimilation of the available vitamin B from the diet through the mediation of the parenteral extract. These circumstances add a further

18. Ivy, A. C.; Morgan, J. E., and Farrell, J. I.: Effects of Total Gastrectomy: Experimental Achylia Gastrica in Dogs with the Occurrence of Spontaneous Anemia and Anemia of Pregnancy, Surg., Gynec. & Obst. **53**: 611 (Nov.) 1931.

19. Isaacs, Raphael: Systemic Relapses During Liver Induced Hemopoietic Remissions in Pernicious Anemia, Am. J. M. Sc. **178**: 500 (Oct.) 1929.

link to the chain of evidence in the group of so-called conditioned deficiencies so clearly defined by Minot,[20] and by Castle and his fellow workers.[21]

Wisconsin General Hospital.

ABSTRACT OF DISCUSSION

DR. FRANK D. GORHAM, St. Louis: The subject of vitamins and their relation to the so-called deficiency diseases has become so complicated that most of us are unable to follow with any degree of orientation the course of events. To me this is particularly true of vitamin B, which is believed to be a factor in at least thirty metabolic disorders. This deficiency may be due to improper diet or may be a result of our civilization or faulty machinery of a particular individual. This investigation has led the authors to the conclusion that atrophic glossitis is most probably dependent on a vitamin B deficiency. They were able to produce this condition in rats by withdrawal of vitamin B from the diet. In the human being, however, their clinical studies were less conclusive but do suggest a possible fruitful field for further investigation. They call attention to the fact that, in man, atrophic glossitis may occur in many conditions other than pernicious anemia. Contradictory, and of especial interest, are those patients who show free hydrochloric acid in the stomach.

DR. WILLIAM S. MIDDLETON, Madison, Wis.: The discussion of Dr. Gorham is sincerely appreciated. We realize, of course, that the human subject is not the rat. We appreciate, too, that there is some discrepancy in a further part of the question which we did not discuss in detail, namely, that our first results on B_2 deficient rations in the rat have produced only inadequate atrophy of the papillae as compared with the results of Miller and Rhoads in their experimental sprue in dogs. We are not convinced, in other words, that this is the only factor. We know that B deficient diets can in rats produce the glossitic condition histologically which we recognize clinically in the several conditions that have been mentioned. I believe that an open mind should be kept as to the mechanism of action as well as to the agent that is responsible for the entire story.

TUBERCULOSIS OF THE GREATER TROCHANTER

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Tuberculosis of the greater trochanter causes localized pain and tenderness associated with swelling, which must be distinguished from tumor and other forms of infection. It is common for the bursae about the trochanter to become involved, with a resulting fluctuating mass containing serum and broken down débris; more rarely, extension into the femoral neck or hip joint is the result.

The literature on the subject is rather meager and consists largely of reports of cases: in one report eleven cases of tuberculosis of the trochanter were presented. Teale,[1] in 1870, described a case of tuberculosis of the bursa over the greater trochanter in which the gluteal tendon appeared to be a factor in prolonging the disease of the bursa. He advised division of the structure for the purpose of removing all muscular tension. In 1903, at which time he[2] reported another case, he mentioned the possibility of confusion of tuberculosis of the bursa and tuberculosis of the hip joint itself. Thurston,[3] in 1907, reported a case of bilateral tuberculous bursitis of the bursa, treated by excision with good results. Wieting,[4] in 1904, reported the largest series of cases of tuberculosis of the greater trochanter and its bursa that had been reported to that time. He believed that trauma, induced by the customary sitting posture assumed by the Turks, who made up his patients, was an important contributing factor in the etiology of the disease. He stated his belief that the primary infection is usually in the trochanter and that it may spread by continuity to the bursa. If the bursa only is explored and no apparent connection can be found leading to the bone, this is probably due to the fact that the tract through which the infection had passed had been plugged or healed. He observed that in cases in which apparently only infection of the bursa existed, perfect healing followed surgical treatment.

Cone,[5] in 1911, spoke of the formation of rice bodies in bursa in connection with tuberculosis of these structures. He also mentioned "primary sclerosing tuberculosis" of the bursae as described by Reinhardt,[6] a condition we have not observed. Clopton,[7] who reported three cases in 1919, concluded that tuberculosis of the greater trochanter usually does not occur in childhood, and he stresses the probability of trauma as an etiologic factor, from the standpoint both of external trauma and of the trauma of muscle pull. Swindt,[8] in 1921, reported one case and also stressed trauma as an etiologic factor, in that infection is usually secondary to trauma. Peabody,[9] in reporting two cases, brought out the importance of making a differential diagnosis of tumors and tuberculosis of the trochanter. He also advised early intervention and excision of the affected area before the formation of sinuses. Keith,[10] in reporting a case, felt that the history, physical manifestations and roentgenograms pointed to neoplasm. Clopton, Peabody and Keith reviewed the fact that the greater trochanter is developed as an epiphysis and deduced that, as such, it is as susceptible to infection with tuberculosis as in any other epiphysis of the long bones; hence the probability of primary infection in the bone and secondary in the bursa adjacent to the trochanter.

The bursa most commonly involved with tuberculosis is the large and constant trochanteric bursa beneath the gluteus maximus, although the subcutaneous bursa of the trochanter or any other bursa about the hip may also be involved by the spread of the infection. Spaltcholz described sixteen bursae in the region

20. Minot, G. R.: Some Fundamental Clinical Aspects of Deficiencies, Ann. Int. Med. **3**: 216 (Sept.) 1929.

21. Castle, W. B.; Heath, C. W.; Strauss, M. B., and Townsend, W. C.: The Relationship of Disorders of the Digestive Tract to Anemia, J. A. M. A. **97**: 904 (Sept. 26) 1931.

From the Section on Orthopedic Surgery, the Mayo Clinic.
Read before the Section on Orthopedic Surgery at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 14, 1933.

1. Teale, T. P.: On the Simulation of Hip Disease by Suppuration of the Bursa over the Trochanter Major, Lancet **2**: 506-507 (Oct.) 1870.

2. Teale, T. P.: On Suppuration of the Bursa Over the Trochanter Major and Its Occupational Imitation of Hip Disease, Lancet **2**: 1355-1356 (Nov.) 1903.

3. Thurston, E. O.: Bilateral Tuberculous Bursitis of the Hips, Ann. Surg. **46**: 919-921 (Dec.) 1907.

4. Wieting, J.: Beitrag zu den Affektionen, namentlich der Tuberkulose, der Schleimbeutel in der Becken-Hüftgegend, Deutsche Ztschr. f. Chir. **74**: 443-466, 1904.

5. Cone, S. M.: Tuberculous Bursitis: Two Unusual Cases, Johns Hopkins Hosp. Rep. **22**: 155-160 (May) 1911.

6. Reinhardt, A.: Die primär sklerosierende Tuberkulose der Schleimbeutel, Deutsche Ztschr. f. Chir. **98**: 63-74, 1909.

7. Clopton, M. B.: Tuberculosis of the Great Trochanter of the Femur, Tr. West. S. A. **29**: 163-168, 1919.

8. Swindt, J. K.: Chronic Trochanteric Bursitis, California State J. Med. **19**: 326-329 (Aug.) 1921.

9. Peabody, C. W.: Differential Diagnosis in Destructive Lesions of the Great Trochanter: Report of Two Illustrative Cases, Boston M. & S. J. **185**: 107-112 (July 28) 1921.

10. Keith, D. Y.: Tubercular Epiphysitis of the Greater Trochanter, Am. J. Roentgenol. **9**: 549-553 (Sept.) 1922.

of the hip, and other observers have described as many as thirty-one. Most of these are not constant and are small; the most important, however, are the gluteus maximus bursa over the greater trochanter, the iliopectineal bursa, and the ischiogluteal bursa. The first one lies between the gluteus maximus muscle and the posterior and lateral surface of the greater trochanter. The iliopectineal bursa is constant and large and is situated between the iliopsoas muscle and the iliofemoral ligament; it often is directly connected with the hip joint. Thus the importance of this bursa can readily be seen when one considers the possibility of spread of infection from the bursa into the hip joint, or vice versa. The ischiogluteal bursa is frequently present between the gluteus maximus muscle, the origin of the biceps and semitendinosus muscles, and the posterior surface of the tuberosity of the ischium.

The literature reveals that tuberculosis of the greater trochanter and the bursa over the trochanter starts usually in adolescence and that it is to be distinguished from disorders of the hip joint and neoplasms. It is apparently generally agreed that adequate treatment consists of radical excision of the diseased bursa and trochanter. The same cardinal points have been brought out in the study of our series of cases.

We selected a series of nineteen cases of disease of the trochanter from a large group, the diagnosis of which was verified by operation, pathologic examination and, in five cases, guinea-pig inoculation. The patients were ten men and nine women. The average age at the time of admission was 35. The oldest patient was 65 and the youngest 21. In most cases the disease started in the late teens and early twenties. The youngest age at onset was 9 years and the oldest 44.

The occupations of the patients apparently had no bearing on the etiology of the condition. There were six housewives, two carpenters, two laborers, three farmers, four office workers and one minister. Five of the patients gave a definite history of trauma about the trochanter preceding the appearance of symptoms, and two had been exposed to tuberculosis in their homes. Previous illnesses also appeared to have no bearing on the condition. One patient had been given a previous definite diagnosis of pulmonary tuberculosis, one of tuberculosis of the knee and one of the ankle.

The complaints on admission were mostly of pain and draining sinuses. Eleven patients complained of pain in the hip, usually mild, that did not interfere with their daily routine. Six patients had pain referred to the front of the thigh and one patient to the knee. The pain of four patients was aggravated by lying on the affected side, of two by walking, and of two by sitting, standing and wet weather. Three of the patients had tumor of the hip, and one each had osteomyelitis, sciatica and a stiffness of the hip, besides the pain. Some patients had more than one complaint, thus accounting for a larger number of complaints than patients. The duration of the complaint averaged eleven and one-half years; the longest was forty years and the shortest five weeks. It is possible that in the latter instance the complaint really started some time before it was brought to the patient's attention, as the condition usually starts insidiously, and often the patient is not aware of it until it is considerably advanced. The right side was affected in fourteen of the cases and the left in five. This may be another point indicative of trauma as an exciting or contributing etiologic factor, since the right side is more commonly injured than the left, whether or not the patient recalls an injury. In some cases we are confident that the disease was present and that the injury directed the patient's attention to it; two of the patients had sustained an injury and in a few days, within a period too short for tuberculosis to develop, had noticed swelling over the trochanter. Thus, in the four cases in which the time between the injury and the onset of the complaint was recorded, the time interval in one case was ten days and in one eight weeks; in the other two cases the interval was ten months and nine years.

The patients usually appeared healthy and were ambulatory. They complained of soreness and swelling about the hip which had existed for some time. Most of them (ten) had been operated on previously, the operation consisting only of incision for drainage. One patient was operated on five times, one four times, one twice and seven once. None of the patients had local heat or redness at any time, an important point to be kept in mind in making a differential diagnosis of disorders in the region of the hip joint.

Inspection readily disclosed distinct swelling over or posterior to the greater trochanter (fig. 1). Cold fluctuating masses of varying size were noted on palpation

Fig. 1.—*A*, anterior view showing tuberculosis of the greater trochanter, involving the bursa; *B*, posterior view showing bulging area over the trochanter from tuberculosis of the bursa.

of this area. Five of the ten patients previously operated on had discharging sinuses, usually of serous material. The skin appeared normal locally in all cases, unless redness and discoloration appeared from application of heat. Motions of the hip, as a rule, were free, and weight bearing was painless. Pressure over the affected area, on the other hand, caused soreness. It has been noted also that in changing position, as in rising from a sitting position, the patient was conscious of pain, owing to muscular pull and stress in the region of the disease. Five patients had a slight limp. Blood pressure was normal in all but two cases in which there was hypertension. The temperature was slightly elevated in only two cases, and in the remainder it was normal on admission to the Mayo Clinic. The hemoglobin was practically normal in all cases and the leukocyte count averaged 8,700; the lowest count was 4,400 and the highest 12,800. The urinalysis and the Wassermann reaction of the blood were negative in all cases. For purposes of comparison and because of the possibility of lumbosacral and sacro-iliac involvement, the roentgenographic examination in these cases included the entire pelvis and both trochanters. In this series the roentgenograms showed the trochanters to be involved on the affected side in fifteen cases (79 per

cent). There was an area of destruction along the outer margin of the trochanter, extending inward in varying distances to the femoral neck. The thickened bursa was sometimes apparent, when compared with the opposite side, and in some cases in which opaque material was injected the infected bursa became rather large. It has been our custom to take roentgenograms of the lungs in all cases of tuberculosis of the bones. In this series of cases the lungs were affected in eight (42 per cent), while in four (21 per cent) there was evidence of tuberculosis in other joints. In two cases (10.5 per cent) the urinary tract was affected. This large percentage of tuberculosis present elsewhere in the body and common injuries to the trochanters in falling and bruising during the active period of life readily demonstrates that injury to the bone may be an exciting or accessory factor in the production of tuberculosis in this region, secondary to a primary lesion in some other part of the body. In fifteen cases the roentgenograms disclosed positive evidence of involvement of bone, and this was confirmed by operation. In two other cases tuberculosis was found at operation to involve the trochanter when the roentgenograms apparently were negative. In two cases apparently the bursa only was involved; that is, no connection could be found leading to the trochanter. It is of interest that the wounds in these two cases healed by primary intention, whereas in cases in which the trochanter was definitely involved they healed slowly, or a sinus formed. The degree of involvement of the trochanter then may be looked on as an index to the difficulty in obtaining healing after operation.

The treatment of tuberculosis of trochanteric bursae and of the trochanter should be radical excision as soon as the diagnosis has been made. The type of operation preferred is total excision of the bursal sac and thorough curettement of the abscess in the bone, or excision of the involved portion of bone. Careful hemostasis and closure without drainage, and a compression pad and bandage all help to diminish the incidence of sinuses. In ten cases, because of the large size of the wound, we found it necessary to insert a small soft rubber drain to provide drainage of serum, which is bound to collect in such a cavity. The wounds were then sutured snugly with silkworm and nonabsorbable dermal sutures. When the serous discharge had diminished, the patient was exposed either to direct sunlight or to a sun lamp.

In this series of nineteen cases the focus was excised in seventeen; in one case the area was aspirated and material was obtained for study, and in one a discharging sinus was curetted. In only two cases were rice bodies found in the infected bursae. In two cases two operations were performed, and in six healing was by primary intention, in nine within a few weeks following the operation. Drainage persisted in four cases. Specimens of tissue taken at the time of operation proved to be tuberculous in all of the nineteen cases. In five cases in which guinea-pig inoculation was done, the results were all positive for tuberculosis.

As postoperative treatment, we have stressed the necessity of general upbuilding of the patient by proper diet, cod liver oil and heliotherapy, both local and general.

REPORT OF ILLUSTRATIVE CASES

CASE 1.—A woman, aged 27, a school teacher, admitted to the Mayo Clinic, Dec. 7, 1926, complained of a painful right hip and ankle. In 1918 she had had an attack of acute multiple arthritis and was in bed for eight months. She continued to have pain in the right ankle and hip; in 1922 the right ankle had been operated on, and a diagnosis of tuberculosis was made. The exact nature of the operation was not known. Pain persisted and she wore a cast from the toes to the knee for one and a half years. In the meantime, a mass appeared over the lateral aspect of the upper third of the right thigh. This was operated on in June, 1923; the wound healed by first intention. Previous illnesses were unimportant and her family history was negative.

On examination, the patient appeared to be fairly well developed but somewhat undernourished. A fluctuating mass was present over the right greater trochanter (fig. 1, *A* and *B*). There was free and painless motion of the hip. There was ankylosis of the right ankle, probably postoperative arthrodesis. The right leg was 2 cm. shorter than the left. Ankylosis of the right sacro-iliac joint also was present. The thorax and abdomen were normal. The systolic blood pressure was 120 and the diastolic 80 in millimeters of mercury; the temperature and pulse rates were normal at 4 p. m. Urinalysis was negative. The estimation of hemoglobin was 68 per cent; the leukocytes numbered 9,100. The Wassermann reaction of the blood was negative. Roentgenograms disclosed destructive arthritis of the right sacro-iliac and right ankle joints. The region of the right trochanter was reported normal on roentgenographic examination. A clinical diagnosis of tuberculous bursitis was made.

An exploratory operation was performed, December 11, and an enlarged bursa was found in the region of the right greater trochanter. The bursa was filled with necrotic tissue, coagulated fibrin and thin watery fluid. It was connected with other bursae between the gluteal muscles. A specimen was sent to a pathologist, who reported tuberculosis. The patient was dismissed from the hospital on the fourteenth day with the wound healed. She was advised to continue antituberculous treatment.

In January, 1927, the patient entered the hospital at her home because of a discharge from the wound. A letter received in May, 1928, stated that the wound was healed and that the ankle and hip were not giving her a great deal of trouble.

CASE 2.—A farmer, aged 44, admitted to the clinic, Dec. 26, 1922, complained of lumps over the right hip and thigh. Twenty-three years previously he had had some soreness and swelling in the region of the right greater trochanter. There was no local heat or redness, but pain was experienced when he tried to lie on the affected side. Apparently, recovery from this attack was uneventful, and he had had no further trouble until about fifteen years previously, when again swelling had appeared in the middle of the thigh posteriorly to the right. The swelling ruptured spontaneously and discharged a watery fluid, which contained white lumps like cottage cheese. The resulting sinus closed six months later and remained closed until the spring of 1922, when a lump appeared over the right greater trochanter. This was followed by the appearance of other swellings on the anterior and posterior surfaces of the thigh. Two weeks before he came to the clinic the swelling over the trochanter ruptured spontaneously and began to discharge. A diagnosis of a bone tumor was made. The patient had had dysentery and malaria in 1898. The family history was negative except that the father had died from nephritis.

The patient appeared to be well nourished. A sinus over the right greater trochanter was discharging. Motions of the hip were slightly restricted in all directions, and there were fluctuating masses over the anterior and posterior surfaces of the middle of the thigh, with no tenderness, local heat or redness. The right inguinal glands were enlarged. The heart and lungs were normal; the systolic blood pressure was 120, and the diastolic 74; the temperature was normal. The urine contained a trace of albumin. The leukocytes numbered 12,000, and estimation of hemoglobin was 77 per cent. The Wassermann reaction of the blood was negative. The tonsils were infected. Roentgenograms of the hip showed an erosion of the greater trochanter with some bony overgrowth, and the roentgenologist made a diagnosis of tuberculosis (fig. 2). A clinical diagnosis of osteomyelitis of the right greater trochanter was made.

Aspiration and evacuation of the fluctuating mass was done, Dec. 28, 1922. About 500 cc. of pus was aspirated from the largest abscess, which was just above the greater trochanter. Jan. 10, 1923, the sinuses were again explored and two additional abscesses in the thigh were drained of broken down tuberculous material. The exact point of the origin of the sinus tract could not be determined, although the finger could be inserted well up to the rim of the ilium. Five large iodoform packs were inserted

into the wound and were removed by the end of the ninth day. The patient was dismissed from observation, February 8, about one month following the operation. He had a serous discharge and was advised to take sun baths and so forth.

The pathologic examinations of secured tissue from the last operation disclosed inflammation. Culture of the material obtained at this time yielded negative results, and two guinea-pigs inoculated with the material were found to be tuberculous at necropsy.

A letter from the patient after he had returned to his home stated that the sinuses were all closed and that he was well.

CASE 3.—A housewife, aged 31, came to the Mayo Clinic, Oct. 26, 1926, because of a sinus and pain in the left thigh. She had been well apparently until 1918, when she began to have pain in the lateral aspect of the left thigh, with some tenderness. This trouble had continued until March, 1925, when a swelling appeared on the posterior aspect of the thigh just below the gluteal fold. The mass measured about 6 by 4 cm. but gradually increased until, July, 1925, when it was incised by a local physician. The patient was in the hospital fourteen weeks with a Buck extension on this leg and then remained in bed at her home for six months. She said she had had fever every day. The sinus closed one week previous to her admission to the clinic and this was followed by fever, nausea, headache and severe pain in the thigh. These symptoms were relieved after drainage had been established. The family history was negative, and the patient had had no previous diseases with the exception of influenza in 1925; appendectomy had been performed in 1911.

Fig. 2.—Tuberculosis of the greater trochanter of twenty-three years' duration.

Fig. 3.—Tuberculosis of the left trochanter and bursa injected with Beck's paste.

Fig. 4.—Tuberculosis of the right sacro-iliac joint and right greater trochanter. There was a history of severe trauma in the region of the hip.

The patient appeared to be well developed and well nourished. There was tenderness over the left greater trochanter and a sinus in the left thigh just below the gluteal fold. A probe was passed into the sinus and from 12 to 14 cm. toward the lesser trochanter. Motions of the hip were good and did not cause pain. Roentgenograms of the region of the hip were negative; however, injection of the sinus with bismuth, October 26, disclosed a large sinus tract passing about the trochanter (fig. 3). The thorax and abdomen appeared to be normal, although roentgenograms of the thorax disclosed evidence of an old healed lesion of apical tuberculosis on the left side. The systolic blood pressure was 120 and the diastolic 80; the temperature was normal and the pulse 88. The urinalysis was negative. The estimation of hemoglobin was 75 per cent, and the leukocytes numbered 12,800. The Wassermann reaction of the blood was negative. A clinical diagnosis was made of tuberculosis of the bursa over the left greater trochanter and involving the greater trochanter.

November 1, exploration and excision of the sinus tract showed that the sinus tract ran from about 9 to 11 cm. below the greater trochanter upward to it, with involvement of the bursa and bone, and then it ran anteriorly around the lesser trochanter downward and forward to the inner side of the femur. The tract, bursa and involved bone were completely excised. The wound was closed with two Penrose drains, which were removed in forty-eight hours. A pathologic diagnosis of tuberculosis was made. The patient was dismissed from the hospital on the sixteenth day with the wound healed by first intention. She has not been heard from since then.

CASE 4.—A logger, aged 25, came to the clinic, Sept. 19, 1929, because of osteomyelitis of the right hip. About three years previously he had been struck over the right hip by a log; considerable pain followed. A diagnosis of fracture was made at the time, and the hip was immobilized in a cast for about eight weeks; but there was still some pain, and he limped. In February, 1927, the hip was operated on by his physician and a sequestrum removed. The operation was followed by a discharge from the wound. There was no history of tuberculosis in the family, and the patient had had no previous illnesses.

At examination there was a postoperative scar on the outer surface of the upper thigh, from a sinus which was discharging, and also a scar over the buttock. There was some limitation of motion at the hip, and roentgenograms gave evidence of old osteomyelitis of the greater trochanter of the right femur with multiple spicules of bone in the soft tissue and also destructive arthritis of the right sacro-iliac joint (fig. 4). The thorax and abdomen appeared to be normal. The systolic blood pressure was 120 and the diastolic 70; the temperature was 97 F. at 1:20 p. m., and the pulse rate was 88 a minute. The urine was normal except for an occasional pus cell. The estimation of hemoglobin was 92 per cent, and the Wassermann reaction of the blood was negative.

At operation, Sept. 23, 1929, the trochanter was chiseled off, the diseased tissue excised and the cavity packed with a strip of petrolatum gauze. On pathologic examination the specimen disclosed tuberculosis. September 30, daily treatments were begun of ultraviolet rays applied to the wound, together with infra-red. The patient was dismissed from the hospital, October 3; some discharge was still present. Continued treatment with ultraviolet rays had practically healed the wound by November 19, at which time he was dismissed from observation. Roentgenograms taken after the operation disclosed tuberculosis of the sacro-iliac joint, tuberculosis of the greater trochanter and loose bone particles, and overgrowth of bone at the margin of the acetabulum.

The patient reported by letter in August, 1931, that his leg was healed. In October, 1932, he returned with swelling and a recurring sinus. The sinus was explored and curetted, and a gauze pack inserted. General antituberculous measures, such

as heliotherapy, rest and cod liver oil, were advised for a prolonged period.

CASE 5.—A woman clerk, aged 38, admitted to the clinic, April 8, 1930, complained of tight muscles and soreness about the right hip. A sister had died of tuberculosis twenty-five years previously, and her mother had died of carcinoma of the liver. The patient had had pneumonia at the age of 14 years and influenza at 26. The present trouble had started about fourteen years before her admission to the clinic with some soreness in the region of the right hip, which would last for

Fig. 5.—*A*, extensive tuberculosis of the right greater trochanter of fourteen years' duration. Involvement of the hip joint and loss of bone salts in the neck of the femur may be noted. *B*, tuberculosis of the greater trochanter eleven months following operation. Involvement of hip joint may be noted.

one or two days. There were long intervals when she had no trouble. In October, 1928, she began to favor the right leg because of pain; this subsided and she had no more trouble until January, 1930, when the muscles of the thigh appeared to tighten as she walked. She could not lie on the right hip because of pain. At this time she started limping, and she had used crutches for six weeks before her examination.

The patient appeared to be somewhat undernourished. There was no limitation of motion, although motion caused some pain in the right hip. There was some tenderness over the right greater trochanter. Roentgenograms gave evidence of extensive tuberculosis involving the greater trochanter, and cystic formation; there was some atrophy of the neck of the femur, and arthritis of the hip (fig. 5 *A*). The systolic blood pressure was 140 and the diastolic 100; the temperature was 100 F. at 10 a. m., and the pulse was 120. Râles were heard in the left upper lobe of the lung; roentgenograms disclosed tuberculosis of the left upper apex. The urine was normal. The estimation of hemoglobin was 59 per cent, and the leukocytes numbered 5,800. The Wassermann reaction of the blood was negative. A clinical diagnosis of tuberculosis of the right greater trochanter was made.

Operation was performed, April 15. The cavity in the greater trochanter was explored and found to be filled with cheesy, broken down material. There was no free pus. Specimens were sent for guinea-pig inoculation and for pathologic examination. The cavity was swabbed with iodine and alcohol and the wound closed without drainage. The pathologist found degenerated tissue of an amyloid nature. The guinea-pig died; the test was positive for tuberculosis. Convalescence was uneventful, and, April 26, eleven days after operation, the wound was healed and the stitches were removed. A cast was applied from the thorax to the knee on the right side. The patient was dismissed from observation, May 2, and advised to take heliotherapy and cod liver oil and to use crutches.

The patient returned in July, as she had been instructed, and the cast was removed. Roentgenograms disclosed improvement in the appearance of the neck of the femur, and marked filling in of the bone in the cavity. She got along well until December 1, when she stumbled and fell. The right knee became swollen and painful and an abscess developed in the incision six weeks before she returned to the clinic, March 30, 1931. At this time she was recovering from influenza and had two draining sinuses. There was a good deal of limitation of motion of the right hip. Roentgenograms disclosed destructive arthritis of the hip. The patient was advised to go to a sanatorium for treatment of tuberculosis of the lungs, and for complete rest of the hip (fig. 5 *B*).

The patient died, Sept. 6, 1932, seventeen years after the onset of her complaint.

CASE 6.—A housewife, aged 44, came to the clinic, Jan. 1, 1932, because of a draining sinus over the greater trochanter of the right femur of eight months' duration. At the age of 9 years she had received a blow on the right thigh above the knee; an abscess resulted, which was incised and drained. It healed easily, although she limped on the leg for many years. Later she received another blow, which was followed by high fever and a discharging sinus in the thigh. She was given tuberculin by her physician and the wound continued to drain for one year. Since that time four operations had been performed, and each time the trouble extended. When she was admitted to the clinic a discharging sinus was still present. She complained of weakness in the affected leg and constant soreness in the thigh. The family history was negative.

Examination disclosed numerous scars on the outer surface of the thigh with a small draining sinus below the trochanter. There was some limitation of motion at the hip. The heart and lungs were normal. The systolic blood pressure was 140 and the diastolic 90; the temperature was 98 F. The urinalysis was negative except for pus graded 4. Erythrocytes and leukocytes were normal, and the Wassermann reaction of the blood was negative. Roentgenograms disclosed some destruction of the greater trochanter, with a few small fragments of bone in the periarticular structures.

January 6, the sinus tract was excised. The tract led down to a large, old chronically inflamed sac, which was attached to the trochanter. This was dissected to the bone, where it was removed to its attachment over the trochanter. The whole sac, which was hard and sclerotic, was taken out. A diagnosis of tuberculosis was made by the pathologist (fig. 6). Two small sequestrums that were in the fibrous tissue about the trochanter were removed. A rubber tube was inserted; the wound was

Fig. 6 (case 6).—Tubercles seen in tissue removed at the time of operation.

loosely sutured and a gauze dressing saturated with alcohol was applied and covered with a cotton pad. The drain was removed in twenty-four hours. The wound healed by first intention. The patient now reports that the wound is in good condition and that she is taking heliotherapy.

SUMMARY

A study was made of nineteen patients with tuberculosis of the greater trochanter and the trochanteric bursa beneath the gluteus maximus, verified by opera-

tion, pathologic examination and, in five cases, guinea-pig inoculation.

Evidence of tuberculous disease in other parts of the body was found in 73 per cent of the cases, 42 per cent of which was in the lungs and 31 per cent in other parts of the body.

The symptoms were usually local and consisted of a cold, fluctuating swelling, local tenderness and, seldom, impairment of motion of the joints.

Roentgenograms showed involvement of the trochanter in 78 per cent of the cases.

The treatment advocated was early radical excision of the involved area, followed by adequate antituberculosis measures, such as rest, proper diet, cod liver oil, and heliotherapy, with special stress on the last mentioned.

The prognosis is good with prolonged careful general treatment. Without treatment, sinuses form and spread infection into the neck of the femur and hip joint.

ABSTRACT OF DISCUSSION

DR. FREDERICK C. KIDNER, Detroit: This thorough paper calls attention to a rare condition and to the importance of diagnosis. I have had only three cases of tuberculosis of the greater trochanter or its bursa. Two of the cases were in children about 12 to 13 years of age, and in both a wrong diagnosis was made. In one case the diagnosis was that of osteitis fibrosa cystica and in the other the diagnosis was of a cyst with a peculiar inflammatory reaction around the outer wall. Operation was performed in both cases, which proved to be tuberculous. Attempts at excision were made and were successful in that they relieved the symptoms, but both patients had persistent sinuses. The third case, that of an elderly man, made me doubt whether this disease originates in the bone. The man was 60 years of age and had a large tumor over the trochanter. This was fluctuant and the diagnosis was obscure. The roentgenogram showed a little erosion of the trochanter itself. Operation disclosed a large sac in which there were typical tuberculous masses. Any connection with the trochanter itself was very difficult to find. The changes as one examined the trochanter at the time of operation were those of pressure rather than of disease. The bone was dense and hard but smooth. In that case an effort was made to excise completely but was not successful, with the result that secondary infection set in and the man died after some months of the secondary infection. These few cases lead me to believe that the complete removal of tuberculosis of the trochanter and its bursa is not an easy operation; but still I believe that the attempt at such removal is the proper treatment.

DR. C. A. STONE, St. Louis: Tuberculosis of the trochanter is not quite as rare as some think. A number of these cases have been seen at the Washington University Dispensary in St. Louis. I want to stress one or two things. In practically all I have found the disease present elsewhere. I believe that trauma has considerable to do with it. It is difficult to eradicate the disease in the trochanter, just as it is difficult to eradicate it elsewhere. It is worth while to pay attention to this disease. For several years past, the best of living conditions existed in the country, the cities require that all their milk should be pasteurized, a great deal has been done in the testing of cattle for tuberculosis, and bone tuberculosis has decreased considerably. I want to make it distinct that at this time living conditions have changed, a great many children are undernourished, and physicians must be on the lookout again for bone tuberculosis, with the natural increase in the number of cases that take place in the greater trochanter.

DR. ARTHUR STEINDLER, Iowa City: I wish to mention the work of Dr. Milgram, who has collected records of twenty or twenty-one cases of chronic inflammation of the gluteal bursa, about half of which were tuberculous. One case had been treated for sciatica for about thirty years. So far as I know, all those cases have been relieved by the complete radical excision of the bursa, as Drs. Meyerding and Mroz have recommended, and I know of one case that has been under observation for several years. It is our impression that the primary tuberculosis of the gluteal bursa, is, if anything, more important than the primary tuberculosis of the trochanter in extension on the bursa.

DR. HENRY W. MEYERDING, Rochester, Minn.: I thought this series was worth reporting because of the scarcity of literature on the subject and because these patients were all operated on, and the material removed from the site proved to be tuberculous. I wrote Dr. Z. B. Adams to find out what his experience had been. He writes as follows: "I have had just your experience with the gluteal bursa which surrounds the trochanter and the tuberculous bursae, which we have opened and cleaned out, and have succeeded for a time in getting them healed up so that it seemed as if the disease was cured. However, these cases have a way of recurring in the bony trochanter itself several years later, and these cases of tuberculosis of the greater trochanter we have treated by cutting out the Brody's abscess or the tuberculous bone, as far as we could, and packing them with grease, à la Orr. These have healed up and gone on quite satisfactorily in some cases, although in some other instances, even when the removal of the whole trochanter has been necessary in order to get rid of the infected bone so far as possible, the disease has slowly spread up the neck and then involved the hip joint." All our patients were mature. We feel that no matter whether one operates or not, general antituberculosis measures are really the important factors in obtaining a cure.

Clinical Notes, Suggestions and New Instruments

STATUS EPILEPTICUS TREATED BY MAGNESIUM SULPHATE, INJECTED INTRAVENOUSLY

FREDERIC STORCHHEIM, M.D., WAUWATOSA, WIS.

Status epilepticus, while not very commonly seen, is one of the gravest symptom pictures encountered by physicians. According to Wechsler,[1] it "generally ends fatally." The great majority of true status attacks, when the patient is unconscious and has epileptiform attacks, between which he does not regain consciousness, with the convulsions coming on with a half hour down to a few minutes or even several seconds between, terminate in death. When the physician reaches the stricken patient the latter is usually flat on his back, in deep coma, breathing stertorously, with copious white froth escaping from his mouth and often from his nostrils. The face may be pale or deeply cyanotic and the entire body wringing wet from perspiration. The pulse is often extremely rapid, especially in the later stage, and of varying quality, and the respiratory rate is usually somewhat increased. The breathing is handicapped by the large quantity of fluid in the air passages and in the lungs themselves. The signs of pulmonary edema are very obvious in these victims.

The medication advised for these patients in the standard textbooks is morphine, with atropine, chloral, ether or chloroform anesthesia. In my experience they have been entirely inadequate. All my patients, five in number, with true status, who were treated thus, died. The cases all had a common characteristic, a frothy emanation from the mouth, with the stertorous breathing, signifying pulmonary edema. There was a terminal rise of temperature to 104 or 105 F. in four of these cases. The pulmonary edema, with the consequent or accompanying heart failure, was largely responsible for the fatal termination. Therapy, in order to be successful, must apparently attack this phase.

Instead of the older treatments mentioned, which had proved to be of no value whatever, intravenous medication with magnesium sulphate was given for the treatment of status epilepticus thereafter. Eight patients have been treated so far, among whom three patients have had two attacks, from which

From the Milwaukee County Asylum for Chronic Insane.

1. Wechsler, I. S.: A Textbook of Clinical Neurology, Philadelphia, W. B. Saunders Company, 1932, p. 616.

they recovered, and one patient has had four attacks and is still alive. So far, no case of status, treated thus, has terminated fatally. It is believed that all these cases would have ended fatally similarly to the first series, if intervention had not been undertaken or if they had been treated along the same lines. The relief obtained was, however, purely symptomatic, as several of the patients have had status attacks again after the recovery from the first attack. In all instances, the relief from the signs of pulmonary edema was very striking.

It was noticed further that in more than half the cases there was an interval after an attack of status, during which the patient was free from convulsions much longer than ordinarily.

In two instances the dose of 10 cc. of 25 per cent magnesium sulphate was decidedly inadequate. It was found safe and advisable to repeat the injection a third time, although more than that would have been, according to the work of Stander,[2] very dangerous.

COMMENT

Lennox and Cobb[3] state that "all observers are agreed that during the seizure itself [epileptic seizure] spinal fluid pressure is greatly increased." Weed and McKibben[4] demonstrated on animals that cerebrospinal fluid pressure and brain bulk may be varied by hypertonic and hypotonic salt solution. Peterman,[5] in discussing convulsions in children, points out the significance of cerebral edema in epilepsy and advises the use of hypertonic solutions. Thus, the intravenous use of magnesium sulphate appears to be logical and rests on a sound physiologic basis.

Search of the *Quarterly Cumulative Index Medicus* as far back as 1917 does not reveal a report of the intravenous use of this drug in the treatment of status. Sodium amytal is widely used intravenously for this purpose, but it has the disadvantage that the patient sleeps for many hours afterward, and bronchopneumonia is to be reckoned with. My patients usually awakened within twenty minutes after an adequate dose had been given, from a condition which is known to be usually fatal, just as spectacularly as a patient in diabetic coma can be aroused by an adequate dose of insulin.

It is interesting to note the parallelism of thought in the medical treatment of eclampsia and status epilepticus. For both conditions, morphine, chloral or ether anesthesia and the like were recommended. In 1926, McNeile and Vruwink[6] described the intravenous use of magnesium sulphate solution in the care and treatment of preeclampsia and eclampsia. They say: "We frankly believe that we can usually depend on intravenous medication to prevent and control convulsions. During the convulsive state of a toxemia of pregnancy the intravenous injection of 20 cc. of a 10 per cent solution of magnesium sulphate will generally stop or at least limit the number of convulsions." Perhaps it would not be surprising to find that the underlying pathologic changes of the central nervous system are analogous, if not identical, in status epilepticus and in eclampsia. The results of treatment of status by the intravenous use of magnesium sulphate are at least as favorable as in eclampsia. Possibly the influence of this substance on the edema of the lungs, as well as on the brain, may play an important if not the decisive rôle.

It is well known that magnesium sulphate, given intravenously, must be given with caution, but the limits of safety, up to which magnesium sulphate may be injected intravenously, have apparently been well worked out. Fischer[7] states that the salt may be safely used in a 2 to 2.5 per cent solution up to 8 Gm. Stander[2] has found on the basis of animal experimentation that, given in a 10 per cent solution, 0.1 Gm. per kilogram of magnesium sulphate intravenously represents a safe dose. Thus up to 7 or 8 Gm. would represent the upper limit of safety.

CONCLUSIONS

1. True status epilepticus is ordinarily fatal unless adequately treated.

2. Magnesium sulphate solution given intravenously, if administered in adequate doses, apparently terminates an attack of status successfully and thus acts as a life saver.

3. An injection of 10 cc. of a 25 per cent solution of magnesium sulphate is apparently a safe dose to give and terminates most attacks of status. If necessary, it may be repeated and possibly given a third time in a well developed individual. More is dangerous.

4. The trend of treatment of true status epilepticus has been very much like the medical treatment of eclampsia.

5. Pulmonary edema, when occurring in status, is apparently successfully coped with by intravenous injection of magnesium sulphate.

2. Stander, H. J.: Effect of Intravenous Administration of Magnesium Sulphate, J. A. M. A. **92**: 631 (Feb. 23) 1929.

3. Lennox, W. G., and Cobb, Stanley: Monograph on Epilepsy, Cambridge, Mass., Harvard University Press, 1929.

4. Weed, L. H., and McKibben, P. S.: Pressure Changes in Spinal Fluid by Injection of Solutions of Various Concentrations, Am. J. Physiol. **48**: 512-531 (May) 1919.

5. Peterman, M. G.: Convulsions in Childhood, J. A. M. A. **99**: 546 (Aug. 13) 1932.

6. McNeile, L. G., and Vruwink, John: Magnesium Sulphate Intravenously in the Care and Treatment of Preeclampsia and Eclampsia, J. A. M. A. **87**: 237 (July 24) 1926.

7. Fischer, M. H.: Classification and Treatment of the Nephritides, Detroit M. J. **16**, 1, 1916.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

AMINOPHYLLINE.—Aminophyllin.—A double salt or mixture of theophylline, $C_5H_4(CH_3)_2O_2N_4.H_2O$, and ethylenediamine, $C_2H_4(NH_2)_2$, containing not less than 70 per cent of anhydrous theophylline (calculated to the dried specimen).

Actions and Uses.—Aminophylline has the actions and uses of theophylline and theophylline-sodio-acetate, over which it has the advantage of greater solubility. Like these it has a diuretic action, produces myocardial stimulation, and occasionally may be useful in relieving the pain of coronary disease.

Dosage.—Orally, from 0.1 to 0.2 Gm.; by rectal administration in the form of suppositories, 0.36 Gm., or, as a retention enema, from 0.3 to 0.4 Gm. dissolved in water; intramuscularly, 0.48 Gm.; intravenously, in emergencies only, 0.24 Gm.

Aminophylline occurs as white or slightly yellowish granules, possessing a slight ammoniacal odor and a bitter taste; soluble in water, about 1 part in 5 parts at 25 C.; insoluble in alcohol and ether. An aqueous solution is distinctly alkaline to litmus paper; on exposure to air it gradually absorbs carbon dioxide with the liberation of theophylline.

Dissolve about 0.5 Gm. of aminophylline in 25 cc. of distilled water, previously boiled to remove carbon dioxide, add, with constant stirring, 1 cc. of diluted hydrochloric acid: collect the precipitate of theophylline on a filter paper, wash with cold water, dry at 100 C.; it melts at from 267 to 272 C. Place about 0.01 Gm. of the resultant precipitate in a porcelain dish, add 1 cc. of hydrochloric acid and 0.1 Gm. of potassium chlorate, evaporate the mixture to dryness on a water-bath: on inverting the dish and examining, the residue assumes a purple color, readily destroyed by fixed alkalis. To the filtrate from the foregoing add 2 cc. of benzoyl chloride, followed by the addition of 5 cc. of sodium hydroxide solution, agitate the mixture and heat gently for a short time and allow to cool: collect the precipitate of ethylenediamine dibenzoate on a filter paper, wash with water and dry at 100 C.; it melts at 244 C.

Incinerate about 1 Gm. of aminophylline, accurately weighed: the residue does not exceed 0.1 per cent. Dry about 1 Gm. of aminophylline, accurately weighed, in a desiccator over calcium chloride for forty-eight hours: the loss does not exceed 4.5 per cent. Transfer about 0.2 Gm. of aminophylline, accurately weighed, to a 500 cc. Kjeldahl flask and determine the nitrogen content according to the Gunning method described in Official and Tentative Methods of Analysis of the Association of Official Agricultural Chemists, edition 3, 1930, page 20, chapter 2, paragraph 22: the percentage of nitrogen corresponds to not less than 32.2 per cent nor more than 33 per cent, calculated to the dried substance. Transfer about 0.15 Gm. of aminophylline to a 100 cc. volumetric flask containing 5 Gm. of sodium chloride and 10 cc. of 20 per cent hydrochloric acid, followed by the addition of 50 cc. of tenth-normal iodine solution; finally dilute with water to the final volume of 100 cc. and allow to stand for thirty minutes, shaking at intervals; filter through paper, rejecting the first 20 cc. of the filtrate; measure accurately 50 cc. of the filtrate into an Erlenmeyer flask and titrate the excess of iodine with tenth-normal sodium thiosulphate solution, using starch-paste as an indicator; the amount of iodine consumed, multiplied by two and the conversion factor (0.004503 Gm.) represents the amount of theophylline present in the specimen; the percentage of theophylline found by this method should not be less than 70 per cent nor more than 83 per cent, calculated to the dried substance.

NOTE.—No satisfactory method for accurate determination of theophylline in theophylline-ethylenediamine has been found. The assay by the periodide method is only roughly approximate; it is important that as nearly exactly the specified amount of aminophylline as possible be used with iodine because the solubility of the periodide precipitate varies. This assay method of standardization is therefore at best approximate and must be considered tentative until such time as more accurate analytic procedure is available.

Aminophylline-Pharmedic.—A brand of aminophylline-N. N. R.

Manufactured by the Pharmedic Corporation, Brooklyn, N. Y. No U. S. patent or trademark.

Ampules Solution Aminophylline-Pharmedic, 0.24 Gm., 10 cc.
Ampules Solution Aminophylline-Pharmedic, 0.48 Gm., 2 cc.
Suppositories Aminophylline-Pharmedic, 0.36 Gm.
Tablets Aminophylline-Pharmedic, 0.1 Gm.

Aminophylline-Searle.—A brand of aminophylline-N. N. R.

Manufactured by G. D. Searle & Co., Chicago. No U. S. patent or trademark.

Ampules Solution Aminophylline-Searle, 0.24 Gm., 10 cc.: Each ampule contains aminophylline-Searle, 0.24 Gm., benzyl alcohol, 0.24 Gm., in sufficient distilled water to make 10 cc.

Ampules Solution Aminophylline-Searle, 0.48 Gm., 2 cc.: Each ampule contains aminophylline-Searle, 0.48 Gm., benzyl alcohol 0.04 Gm., in sufficient distilled water to make 2 cc.

Tablets Aminophylline-Searle, 0.1 Gm. (1½ grains).

Metaphyllin.—A brand of aminophylline-N. N. R.

Manufactured by the Byk Guldenwerke Chemische Fabrik, Berlin, Germany (Adolphe Hurst & Co., New York, N. Y., distributor). U. S. patent 919,161 (April 20, 1909; expired). U. S. trademark 252,503.

Ampules Solution Metaphyllin, 0.24 Gm., 10 cc.
Ampules Solution Metaphyllin, 0.48 Gm., 2 cc.
Suppositories Metaphyllin, 0.36 Gm.: Each suppository contains metaphyllin 0.36 Gm. in a cacao butter base.
Tablets Metaphyllin, 0.1 Gm.

CHLORIODIZED RAPESEED OIL.—A Halogenated Rapeseed Oil.—A halogenated addition product of rapeseed oil containing from 24 to 26 per cent iodine and from 7 to 8 per cent chlorine in organic combination.

Actions and Uses.—In the form of an emulsion, chloriodized rapeseed oil is used as a roentgenographic opaque medium in urography.

Dosage.—The amount of emulsion to be used is determined by the size of the cavity to be visualized. Intravenous and intraspinal injections are contraindicated.

Manufactured by the Dermatological Research Laboratories branch of the Abbott Laboratories, North Chicago, Ill. U. S. patent 1,870,023 (Aug. 2, 1932; expires 1949).

Ampules Campiodol Emulsion, 20 cc.: Chloriodized rapeseed oil 5 cc., acacia solution (35 per cent) 5 cc., and distilled water 10 cc.

Chloriodized rapeseed oil is a yellow, semiviscous oil, having an alliaceous odor and an oleaginous taste, soluble in benzene, carbon disulphide, chloroform and ether, insoluble in alcohol and water. On exposure to air and sunlight it decomposes, turning a brown color. Specific gravity at 20 C., from 1.2 to 1.3.

Boil about 0.5 cc. of chloriodized rapeseed oil and 20 cc. of half-normal potassium hydroxide alcoholic solution, in a porcelain dish for about ten minutes, evaporate the liquid on a water bath and ignite the residue. Dissolve the residue in 10 cc. of water, filter the solution, add 3 cc. of nitric acid and 2 cc. of silver nitrate solution to the filtrate; collect the precipitate consisting of a mixture of silver chloride and iodide on a filter, wash with diluted nitric acid and water, percolate the precipitate obtained with 10 cc. of diluted ammonium hydroxide several times: a white, curdy precipitate results on the addition of an excess of diluted nitric acid. Mix 10 cc. of chloriodized rapeseed oil with 50 cc. of purified petroleum benzin: a transparent liquid results.

Dissolve about 1 cc. of chloriodized rapeseed oil in 10 cc. of chloroform, add a few drops of phenolphthalein solution and 0.3 cc. of tenth-normal sodium hydroxide solution; the liquid becomes red (*limit of acidity*). Shake 1 cc. of chloriodized rapeseed oil with 50 cc. of water, allow the oil to separate, filter the supernatant layer through a wetted filter: the filtrate yields no more than a slight opalescence with 1 cc. of diluted nitric acid and 1 cc. of silver nitrate solution (*soluble inorganic halides*).

Ignite about 1 Gm. of chloriodized rapeseed oil accurately weighed; the residue does not exceed 0.01 per cent. Transfer about 0.3 Gm. of chloriodized rapeseed oil, accurately weighed, to a bomb tube; determine chlorine and iodine contents by the modified Carius method. Collect the insoluble residue of silver halide on a filter paper, wash thoroughly with diluted nitric acid and water, puncture the filter, wash the insoluble material into a 250 cc. glass stoppered Erlenmeyer flask, using about 100 cc. of previously filtered stronger ammonium hydroxide, stopper the flask, shake the flask and contents and allow to stand for one hour. Collect the insoluble residue of silver iodide on a tared Gooch crucible, wash with diluted ammonium hydroxide and water, and dry to constant weight at 100 C.: the amount of iodine found is not less than 24 per cent nor more than 26 per cent. To the ammoniacal filtrate from the iodine determination add 25 cc. of potassium iodide solution and remove the ammonia by heating on a water bath, collect the insoluble residue of silver iodide on a tared Gooch crucible, wash with water and dry to constant weight at 100 C.: the amount of silver iodide found calculated as chlorine is not less than 7 per cent nor more than 8 per cent.

BENZEDRINE.—Racemic desoxy-nor-ephedrine.—Racemic benzyl-methyl carbinamine.—A synthetically prepared racemic mixture of bases having the formula $C_6H_5CH_2CHNH_2CH_3$.

Action and Uses.—Benzedrine produces local effects similar to those of ephedrine. Local application, by means of a spray or dropper, of a 1 per cent solution in liquid petrolatum, or inhalation of the vapors of benzedrine or its carbonate produces shrinking of the nasal mucosa in head colds, sinusitis, vasomotor rhinitis, hay fever and asthma. Both benzedrine and its carbonate (the latter readily forms on exposure of benzedrine to air) are volatile.

Dosage.—As a spray, a 1 per cent solution in liquid petrolatum; as an inhalant, one or two inhalations through each nostril at hourly intervals, has been recommended. Continued overdosage should be guarded against, as this has caused restlessness and sleeplessness; but no serious reactions have been observed.

Manufactured by Smith, Kline & French Laboratories, Philadelphia, Pa. U. S. patent 1,921,424 (Aug. 8, 1933; expires 1950). U. S. trademark 272,357.

Benzedrine Inhaler: Each inhaler tube contains, at the time of packing, benzedrine 0.325 Gm., oil of lavender 0.097 Gm., and menthol 0.032 Gm.

Benzedrine Solution: Benzedrine 1 per cent, oil of lavender 0.33 per cent, in liquid petrolatum.

Benzedrine occurs as a colorless, mobile liquid, boiling at 200-203 C., with slight decomposition. The specific gravity at 25 C. is 0.931. The vapor pressure at ordinary temperature is relatively high, and the substance possesses a strong basic odor and a burning taste. It is soluble in ether and alcohol and slightly soluble in water.

Place 1 Gm. of benzedrine in an Erlenmeyer flask, add 50 cc. of water and 5 cc. of 40 per cent sodium hydroxide solution, then add benzoyl chloride, 0.5 cc. at a time; shake the flask after each addition; add the benzoyl chloride until no more precipitate forms after an addition. Recrystallize twice from 50 per cent alcohol solution, dry the crystals; the melting point is 134-135 C. The nitrogen content of the benzoate by the micro Dumas method is not less than 5.70 nor more than 5.95 per cent.

Transfer 0.5 Gm. of benzedrine, accurately weighed, to a tared weighing bottle and place on the steam bath for one hour. The residue is not more than 0.5 per cent (*nonvolatile compounds*). Dissolve 1 cc. of benzedrine in 10 cc. of liquid petrolatum U. S. P. X (anhydrous): no turbidity is produced (*water*).

Suspend about 1 Gm. of benzedrine, accurately weighed, in 10 cc. of water and titrate with half-normal sulphuric acid, using methyl red as an indicator: the acid used corresponds to not less than 95 per cent nor more than 100 per cent of the base (1 cc. half-normal sulphuric acid is equivalent to 0.0675 Gm. of base).

Determine carbon, hydrogen and nitrogen by micro combustion methods. The carbon should be not less than 79.7 nor more than 80.2 per cent; the hydrogen, not less than 9.6 nor more than 9.9 per cent; and the nitrogen, not less than 10.2 nor more than 10.6 per cent.

Benzedrine Inhaler.

Transfer the cotton filling to a Kjeldahl distillation flask, add 250 cc. of water and 1 Gm. of sodium hydroxide; distil 150 cc. into 20 cc. of tenth-normal sulphuric acid, titrate the excess acid with tenth-normal sodium hydroxide solution: the base is equivalent to not less than 0.305 Gm. nor more than 0.360 Gm. per tube.

Transfer the solution from the titration to a separatory funnel, extract with 30 cc. of ether, transfer the ether extract to an Erlenmeyer flask, add 2 cc. of 40 per cent sodium hydroxide solution and 0.5 cc. of benzoyl chloride and shake the flask and contents for ten minutes; set aside for two hours; add 0.5 cc. of benzoyl chloride, shake the flask and contents for ten minutes, set aside at the end of two hours add 0.5 cc. of benzoyl chloride, shake the flask for ten minutes, allow to stand on the steam bath until the odor of benzoyl chloride has disappeared; remove the precipitate by filtration, wash with cold water, dry at 90 C.: the melting point is 130-135 C.

Benzedrine Solution.

Transfer an accurately weighed sample of benzedrine solution weighing about 15 Gm. to a Kjeldahl distillation flask, add 5 Gm. of talc, 250 cc. of water and 1 Gm. of sodium hydroxide; distil 150 cc. into 20 cc. of tenth-normal sulphuric acid, titrate the excess acid with tenth-normal sodium hydroxide solution: the base is equivalent to not less than 0.95 per cent nor more than 1.05 per cent.

Transfer the foregoing solution to a separatory funnel and proceed to determine the melting point of benzedrine benzoate as outlined under "Benzedrine Inhaler."

ALLERGENIC EXTRACTS-LEDERLE (See New and Nonofficial Remedies, 1933, p. 27).

The following product, marketed in dilutions representing respectively, 0.0005 mg., 0.005 mg. and 0.1 mg. of nitrogen per cubic centimeter, has been accepted:

Fish Glue Allergenic Extract-Lederle.[39]

The product marked 10 is prepared by boiling the heads of any common fish for one hour in acidified distilled water; for example, 40 pounds of fish heads in 30 liters of water with 45 cc. of glacial acetic acid. The resulting material (into a 250 cc. glass stoppered Erlenmeyer flask, using about 100 cc. of previously filtered stronger ammonium hydroxide, stopper the flask, shake the flask and contents and allow to stand for one hour. Collect the insoluble residue of silver iodide on a tared Gooch crucible, wash with diluted ammonium hydroxide and water, and dry to constant weight at 100 C.: the amount of iodine found is not less than 24 per cent nor more than 26 per cent. To the ammoniacal filtrate from the iodine determination add 25 cc. of potassium iodide solution and remove the ammonia by heating on a water bath, collect the insoluble residue of silver iodide on a tared Gooch crucible, wash with water and dry to constant weight at 100 C.: the amount of silver iodide found calculated as chlorine is not less than 7 per cent nor more than 8 per cent.

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DIPHTHERIA IMMUNITY TEST (SCHICK TEST) (See New and Nonofficial Remedies, 1933, p. 398).

Hixson Laboratories, Inc., Johnstown, Ohio.

Diphtheria Toxin for the Schick Test (Diluted).—A diphtheria toxin prepared by growing diphtheria bacilli in broth, aging and diluting with a solution containing sodium borate 0.36 per cent, boric acid 0.53 per cent, and sodium chloride 0.61 per cent. The diluted toxin is of such strength that 0.1 cc. (one dose) given intracutaneously constitutes one-fiftieth minimum lethal dose for a guinea-pig of 250 Gm. weight. The product as marketed is ready for use, no diluent being required. Merthiolate 1: 10,000 is used as preservative. Marketed in packages containing sufficient material for 10, 25 and 50 tests.

STAPHYLOCOCCUS VACCINE (See New and Nonofficial Remedies, 1933, p. 390).

The Gilliland Laboratories, Inc., Marietta, Pa.

Staphylococcus Vaccine (Albus and Aureus). (See New and Nonofficial Remedies, 1933, p. 390.)—Also marketed in packages of one 5 cc. vial containing 2,000 million killed bacteria per cubic centimeter.

Committee on Foods

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. RAYMOND HERTWIG, Secretary.

CONTAMINATION OF FRUITS AND VEGETABLES WITH TOXIC INSECTICIDE SPRAY MATERIAL

Fruits and vegetables are frequently sprayed with highly toxic material for destruction of insects or fungus. Residues of these sprays may remain on the foods as distributed for consumption or for use in preparation of canned or other prepared forms of fruits and vegetables and endanger public health.

Distributors of fruits and vegetables that may bear toxic spray material are obligated to remove such poisonous contaminations before they enter commerce for retailing to the public, or to warn food manufacturers who will use the products for preparation of manufactured foods of the possible presence of the spray residue. Food manufacturers using fruits and vegetables should take proper precautions either to assure the absence of toxic spray contaminations or their removal before the products are prepared or packed for consumption.

Food articles, in the interest of public welfare, shall bear or contain no toxic contaminations that may endanger health. Fresh fruits and vegetables likely to have been sprayed should be carefully washed with adequate water or special solvent solutions before use. Washing, however, does not assure removal of all spray materials. Distributors of fresh fruits and vegetables and manufacturers of foods containing these products bear a serious responsibility to the public that their products as presented for consumption are entirely wholesome; carelessness or disregard of this public health responsibility is criminal.

REPORTING OF VIOLATIONS OF REQUIREMENTS FOR ACCEPTED FOODS

Physicians, sponsors of accepted foods, or others are urged to notify the office of the Committee of violations of the Committee's Rules and Regulations and General Committee Decisions for accepted foods. This cooperation will materially aid the Committee in its public welfare and health work in the field of foods. Submitted advertising violating requirements will be given prompt attention whether the sender identifies himself or not.

MINERAL, SPRING, NATURAL OR ALKALINE WATERS

Mineral, spring, natural or alkaline waters are usually advertised with unwarranted claims as to their health values. These waters are often alleged to possess curative and medicinal properties.

Analyses of most of these waters do not disclose explanations or evidence for remarkable curative properties. In case of potable mineral waters their mineral content comprises traces only of commonly occurring salts present in substantially greater quantities in ordinary foods. In many cases the deceptive therapeutic claims are the result of hearsay and illusion, or of deliberate scheming to defraud. Mineral waters having therapeutic action, generally cathartic, usually contain salts such as sodium phosphate or magnesium sulphate. Such therapeutically active mineral waters come under the purview of the Council on Pharmacy and Chemistry.

Formerly, therapeutic properties were attributed to mineral waters containing lithium or possessing radioactivity. Such characteristics as radioactivity or the presence of lithium in drinking water have not been shown to have useful effects. Strongly radioactive waters may be distinctly harmful. Natural waters contain only traces of lithium. The fortification of waters with lithium salts has no rational foundation; larger doses of lithium may be dangerous.

Spring waters of low mineral content are not to be distinguished physiologically from ordinary potable tap or drinking water; their properties for meeting the water needs of the body are the same. Drinking water should be pleasing to the taste and free from contamination that may produce disease. Therapeutic or curative claims for mineral waters that are not laxative are to be viewed with suspicion.

The daily water requirements for health cannot be defined with any degree of exactness, as activity, temperature and other conditions influence the demands. Sufficient water should be taken with meals and between meals to satisfy thirst. Glutting the body with water is not justified. Under disease conditions the physician should prescribe the water intake.

Good bottled waters of uniform composition, of tested purity and freedom from pathogenic contamination at the source and protected from possible contamination during transit to the consumer, have special usefulness; they serve as refreshing, pleasing drinking water with a maximum safety assurance and merit the support of popular and professional advertising appropriate for pure potable water.

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

GERBER'S STRAINED STRINGLESS GREEN BEANS

Manufacturer.—Gerber Products Company, Fremont, Mich.

Description.—Strained cooked stringless green beans retaining in high degree the natural vitamin and mineral values; the coarser fibrous material is removed. No added seasoning or sugar.

Manufacture.—Stringless green beans grown from selected seed under company supervision are harvested at the proper state of maturity, promptly washed, inspected, cooked, sieved, canned and processed as described under Gerber's Strained Vegetable Soup (THE JOURNAL, July 22, 1933, p. 282).

Analysis (submitted by manufacturer).—

	per cent
Moisture	93.2
Total solids	6.8
Ash	0.4
Fat (ether extract)	0.1
Protein (N × 6.25)	1.3
Reducing sugars before inversion (as invert)	1.5
Sucrose (copper reduction method)	0.2
Starch (acid hydrolysis method)	0.9
Crude fiber	0.8
Carbohydrates other than crude fiber (by difference)	4.2

Calories.—0.2 per gram; 6 per ounce.

Vitamins, Minerals and Claims of Manufacturer.—See Strained Vegetable Soup (THE JOURNAL, July 22, 1933, p. 282).

SUNBONNET FLOUR (BLEACHED) LASSIE FLOUR (BLEACHED)

Manufacturer.—Federal Mill, Inc., Lockport, N. Y.

Description.—Bagged hard winter wheat "standard patent" flour; bleached.

Manufacture.—Selected hard winter wheat is cleaned, scoured, tempered and milled by essentially the same procedures as described in THE JOURNAL, June 18, 1932, page 2210. Chosen flour streams are blended and bleached with nitrogen trichloride (one-eleventh ounce per 196 pounds).

Claims of Manufacturer.—For bread baking.

VALUE BRAND EVAPORATED MILK

Packer and Distributor.—John F. Jelke Company, Hillsboro, Wis.

Description.—Unsweetened sterilized evaporated milk. The same as Jelke Good Luck Evaporated Milk (THE JOURNAL, July 29, 1933, p. 367).

McCORMICK'S BEE BRAND RED PEPPER (CAYENNE)
McCORMICK'S BEE BRAND WHOLE RED PEPPER (JAPAN CHILLIES)
McCORMICK'S BEE BRAND CRUSHED RED PEPPER (ITALIAN STYLE)

Manufacturer.—McCormick and Company, Inc., Baltimore.

Description.—Whole red pepper (Japan chillies) and ground red pepper (Cayenne) (dried ripe fruit of Capsicum frutescens L., or C. baccatum L.).

Manufacture.—The peppers are harvested, spread out in the sun to dry for two weeks, exported in bags and packed in cartons and tins at the packing plant.

Analysis (submitted by manufacturer).—

	per cent
Moisture	6.1
Total ash	6.3
Acid insoluble ash	0.7
Volatile ether extract	0.6
Nonvolatile ether extract	15.4
Protein (N × 6.25)	13.4
Starch	1.1
Crude fiber	23.1
Carbohydrates other than crude fiber (by difference)	35.1

Claims of Manufacturer.—Conforms to the respective United States Department of Agriculture standards.

RYE BRACKLE WAFERS

Manufacturer.—Paul Schulze Biscuit Company, Chicago.

Description.—Rye wafers seasoned with salt.

Manufacture.—Rye grain, with a portion of the endosperm removed, and salt are mixed with water and are whipped into a fluffy dough. The dough is rolled into thin bands, baked, cut into small wafers, dried on trays to a moisture content of from 3 to 4 per cent, and packed in wax-paper wrapped cartons.

Analysis (submitted by manufacturer).—

	per cent
Moisture	7.0
Ash	3.2
Fat (ether extraction method)	2.0
Protein (N × 5.62)	10.5
Reducing sugars as dextrose	1.1
Sucrose	5.6
Crude fiber	1.8
Carbohydrates other than crude fiber (by difference)	75.5

Calories.—3.6 per gram; 102 per ounce.

Claims of Manufacturer.—Provides roughage as an aid to relieve constipation due to insufficient bulk in the diet.

IXL BAKERS FLOUR (BLEACHED)
(MALTED WHEAT FLOUR ADDED)

Manufacturer.—Saxony Mills, St. Louis.

Description.—Hard winter wheat patent flour containing added malted wheat flour (0.1-0.4 per cent); bleached.

Manufacture.—Hard winter wheat is cleaned, scoured, tempered and milled by essentially the same procedures as described in THE JOURNAL, June 18, 1932, page 2210. Chosen flour streams are blended, admixed with malted wheat flour (0.1-0.4 per cent), bleached with nitrogen trichloride (one-ninth ounce per 196 pounds) and with a mixture of benzoyl peroxide and calcium phosphate (1 part to 50,000 parts of flour).

Analysis (submitted by manufacturer).—

	per cent
Moisture	12.9
Ash	0.46
Reducing sugars as maltose	3.1

Calories.—3.5 per gram; 99 per ounce.

Claims of Manufacturer.—For commercial bread bakeries; added malted wheat flour increases the fermentation tolerance.

WONDER LOAF

Manufacturer.—Bismarck Baking Company, Bismarck, N. D.

Description.—A white bread made by the sponge dough method (method described in THE JOURNAL, March 5, 1932, p. 817); prepared from patent flour, water, sweetened condensed skimmed milk; a hydrolyzed starch, lard, salt, yeast, malt extract, sucrose, and a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate.

DOLE HAWAIIAN FINEST QUALITY PINEAPPLE JUICE (UNSWEETENED)
DOLE BRAND

Packer.—Hawaiian Pineapple Company, Ltd., San Francisco.

Description.—Hawaiian pineapple juice retaining in high degree the natural vitamin content of the raw pineapple. The same as Dole Hawaiian Finest Quality Pineapple Juice (Unsweetened) (THE JOURNAL, June 3, 1933, p. 1769).

MERITA BREAD (SLICED)

Manufacturer.—American Bakeries Company, Atlanta, Ga.

Description.—A white bread made by the straight dough method (method described in THE JOURNAL, March 12, 1932, p. 889); prepared from flour, water, sucrose, shortening, powdered skim milk, salt, invert sugar, yeast, malt syrup, and less than 0.14 per cent by weight of a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate.

LUCKY SWASTIKA BREAD FLOUR (BLEACHED)
BLUE RIBBON BREAD FLOUR (BLEACHED)
MOHAWK BREAD FLOUR (BLEACHED)

Manufacturer.—Federal Mill, Inc., Lockport, N. Y.

Description.—Northwestern spring wheat and hard winter wheat patent flour; bleached.

Manufacture.—Selected spring and hard winter wheats are cleaned, scoured, tempered and milled by essentially the same procedures as described in THE JOURNAL, June 18, 1932, page 2210. Chosen flour streams are blended and bleached with nitrogen trichloride (one-fourteenth ounce per 196 pounds) and with nitrogen oxide.

Claims of Manufacturer.—For bread baking.

PLEE-ZING PURE TOMATO JUICE

Manufacturer.—Loudon Packing Company, Terre Haute, Ind.

Distributor.—Plee-Zing, Inc., Chicago, successor to the George H. Simmons Corporation, St. Louis.

Description.—Pasteurized tomato juice with a small amount of added salt; retains in high degree the vitamin content of tomatoes. The same as Loudon Brand Tomato Juice (THE JOURNAL, June 25, 1932, p. 2289).

BLACK BIRD BRAND CRYSTAL TABLE SYRUP
(CORN SYRUP FLAVORED WITH ROCK CANDY SYRUP)

Packer.—Wheeler-Barnes Company, Minneapolis.

Distributor.—H. P. Lau Company, Lincoln and Fremont, Neb.

Description.—Table syrup; corn syrup base (85 per cent) with rock candy syrup (15 per cent), the same as White Oak Brand Crystal White Syrup (THE JOURNAL, Oct. 15, 1932, p. 1353).

McCORMICK'S BEE BRAND CLOVES

Manufacturer.—McCormick and Company, Inc., Baltimore.

Description.—Ground cloves (dried flower buds of Caryophyllus aromaticus L.).

Manufacture.—Flower buds of a dull red color of Caryophyllus aromaticus L. are dried on mats for from six to eight days, during which time from 50 to 60 per cent loss in weight occurs; they are exported to the company's packing plant, cleaned, ground and packed in tins.

Analysis (submitted by manufacturer).—

	per cent
Moisture	7.9
Total ash	6.5
Acid insoluble ash	0.4
Nonvolatile ether extract	6.6
Volatile ether extract	18.6
Protein (N × 6.25)	11.9
Crude fiber	8.9
Carbohydrates other than crude fiber (by difference)	39.6

Claims of Manufacturer.—Conforms to the respective United States Department of Agriculture definition and standard.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, OCTOBER 21, 1933

MALNUTRITION IN CHILDREN

The Secretary of Labor, through the Children's Bureau, called a conference in Washington, October 6, to consider what the Children's Bureau appears to regard as a significant increase in malnutrition directly attributable to the current depression. Representatives of official and voluntary health and relief agencies and of the medical profession and allied workers were invited to this conference. Prior to the conference a meeting of a selected executive committee had been held, and considerable publicity had been given to the opinion of the Children's Bureau that increase of malnutrition among children constitutes a serious menace at this time. The title Child Health Recovery, applied to the program proposed by the Children's Bureau, implies notable deterioration in child health during the years of economic stress.

The report of the executive committee, as presented to the conference, stated that the objective of the conference is to locate undernourishment, to initiate plans to overcome existing conditions of malnutrition and to prevent its further occurrence by dietary and medical procedures. Cooperation is to be asked of state and local departments of health, education and welfare, of state and local relief administrations, and of state and local medical and dental societies. All these are to be asked to coordinate themselves under state, county and local committees. The program is to include consideration of families not on relief as well as those receiving relief. The term child is to cover the period from infancy through adolescence. The Children's Bureau is to prepare a record blank to insure uniformity of recording. Examinations are to be made of large groups of children. These examinations and the subsequent treatment of the undernourished are to be paid for out of federal relief funds.

The report of the executive committee was supported by the presentation of statistics from New York City, Massachusetts rural regions, a Philadelphia relief group, and Denver social agencies. A number of speakers, including the federal relief administrator, supported the contention that the nation faces a significant increase in malnutrition among children. However, a number of experienced public health workers, among them an officer of the federal government, pointed out that objective standards on which a diagnosis of malnutrition can be based are not available and emphasized that statistical evidence in current morbidity and mortality rates does not indicate any widespread emergency, though conditions in certain localities are admittedly deplorable. Warnings were issued on the floor of the conference against attempting to sell the country a famine program, against a national hysteria, and against wasting money on medical examinations when undernourished children, so far as they can be identified in the light of existing knowledge, are already known to physicians, nurses and social workers; in a word, against making a hullabaloo. Doubt was expressed as to the wisdom of superimposing a complex new organization on competent local workers and thus meddling with local agencies. It was pointed out that the expense involved in the examination program would go far toward providing adequate food for all children on relief. It was also pointed out that some malnutrition is always present, that undernourishment is not confined to the poor, that this problem was not born in 1929, and that its consideration at this conference was merely another symptom of dumping on the national table at this time of practically every instance of individual need.

In the end, approval of the report of the executive committee was moved. A question from the floor raised the point as to whether this report, if adopted, was to be considered binding on state and local groups, and the chair replied that its adoption would put it in the status of a recommendation. The report was adopted by *viva voce* vote.

Thus the federal government seems to be sponsoring a so-called child health recovery program in the face of an opinion expressed by a representative of one of its important bureaus to the effect that no unusual emergency has been shown to exist, as well as other opinions that there is no evidence of child health deterioration. Therefore, by implication, the title Child Health Recovery is a misnomer. Men and women whose genuine interest in child health cannot be questioned and whose experience and ability entitles them to an opinion have expressed their conviction that the wholesale examination of children in the absence of any objective criteria for malnutrition would be a waste of time and money and would give only a mass of unreliable statistical data. Fortunately, the plan is now in the hands of the states, and the medical and dental professions will have a voice in state and local programs. At least two state medical societies, Pennsylvania and New Jersey, have developed programs for child health conservation in their respective states, both projects antedating that now proposed by the Children's Bureau. Their experience should offer suggestions and guidance

to other state committees. It is to be hoped that all local committees, in outlining their plans for safeguarding child health, will heed the voices of those who point out the disadvantages of the proposed program, as well as those who support the proposed plan. Deterioration of child health must not be permitted to occur, but pessimism and hysteria should not be allowed to undermine what appears to be a revival of confidence.

THE ANTISCORBUTIC POTENCY OF CERTAIN FOODS

The conquest of scurvy, a disease of mankind that has a recognized history of several hundred years, illustrates in almost dramatic fashion what modern science has accomplished for human welfare in general and for the practice of medicine in particular. When James Lind, surgeon in the British navy, published his classic on scurvy nearly two hundred years ago, it became clear that the malady was due to a lack of fresh food as distinguished from stale or preserved foods, such as sea biscuit, salt meats and dried vegetables. When Lind's treatise appeared it served, in the words of Hess,[1] to crystallize the conception of scurvy, which had been stretched out of all proportions to include an ever increasing conglomeration of clinical conditions. Scurvy had become the alpha and omega of professional routine, the catchword of the day, the asylum ignorantiae of the practical man. Into this chaos, as Hirsch expresses it, "the first beams of light fell when Lind's classic work appeared."

About twenty years ago, thanks to the elucidating contributions of animal experimentation, it was clearly shown that scurvy is caused by the lack of a dietary essential that presently became classed as a vitamin with the specific designation of vitamin C. The ability to make progress in subsequent years is attributable chiefly to the fact that certain animal species, notably guinea-pigs, are susceptible to a series of scorbutic symptoms almost exactly analogous to those of man. The possibility of producing experimental scurvy at will made it easy to study antiscorbutic measures. The enthusiasm for such prophylactic undertakings was heightened when the susceptibility of the bottle-fed infant to scurvy was clearly demonstrated. This happened after the pasteurization of milk began to become common as a means of safeguarding health against certain milk-borne diseases. Today the use of an antiscorbutic in the diet of artificially fed infants has become almost universal.

The most recent phase of the study of scurvy includes the brilliant demonstration that vitamin C, the antiscorbutic food factor, is a well defined organic chemical entity, comparatively simple in nature. Its synthesis in the laboratory may actually be accomplished at any moment, for several chemists are "hot on the trail" of the six carbon ascorbic acid $C_6H_8O_6$, endowed with the virtue of preventing the pathologic changes in organs and tissues exhibited when vitamin C is not adequately supplied along with the other essentials of the human dietary. The chemical identification of the vitamin has been accompanied by efforts at chemical assay instead of the more laborious biologic measurement of potency. Thus, several minutes' scientific study in the chemist's laboratory is destined to supply, with reasonable accuracy, information about foods that has in the past required several weeks of patient observation on animals. Recently, for example, British biochemists [2] have made estimates of the ascorbic acid content—that is, the amount of vitamin C—in a considerable number of food materials and have compared the results with those obtained by biologic assays. The outcome is of practical interest in showing anew that cow's milk is incomparably poorer in ascorbic acid than are the familiar current antiscorbutics. For example, whereas the ascorbic acid content of milk varies from 0.019 to 0.025 mg. per gram, the citrus fruit juices approximate from 0.50 to 0.75 mg. This means that it may require from 1 to 2 ounces of fresh cow's milk to afford the antiscorbutic protection inherent in less than 2 cc. (less than half a teaspoonful) of orange or lemon juice. Even at its best, therefore, a milk diet calls for supplementation with an effective antiscorbutic. The choice is no longer limited as it was in the days when the North American Indians taught the explorer Jacques Cartier how to save the lives of his men with extracts of "pine needles."

1. Hess, A. F.: Scurvy, Past and Present, Philadelphia, J. B. Lippincott Company, 1920.

2. Birch, T. W.; Harris, L. J., and Ray, S. N.: A Microchemical Method for Determining the Hexuronic Acid (Vitamin C) Content of Foodstuffs, Biochem. J. **27**: 590, 1933.

Current Comment

GASTRIC ACHYLIA AND ANEMIA

It seems increasingly clearer, from the more recent studies on anemia, that some of the manifestations of this multiform disorder must be associated with more than one etiologic factor. Among the aspects that present themselves from this point of view, perhaps the most interesting and clinically important are the indications that the stomach may have a definite and significant connection with pernicious anemia. As stated recently,[1] the occurrence of achlorhydria in pernicious anemia, the supervention of the disease in man following gastrectomy, the marked therapeutic effects of products of gastric digestion and of preparations of gastric tissue, are convincing evidence of the existence of this relationship. That achlorhydria is frequently associated with an anemia secondary in type is also attracting considerable interest. One outcome of the situation has been a growing number of investigations in which possible interrelations of gastric achylia and various types of anemias have been

1. Mullenix, R. B.; Dragstedt, C. A., and Bradley, J. D.: Hemoglobin Regeneration in Gastrectomized Dogs, Am. J. Physiol. **105**: 443 (Aug.) 1933.

examined. For example, some time ago Ivy, Morgan and Farrell [2] observed the occasional development of a spontaneous anemia in gastrectomized dogs and in dogs with a pouch of the entire stomach. They reported an increased tendency to anemia in gastrectomized female dogs that became pregnant. This they postulated as indicating that the gastrectomy had reduced the factor of safety in the dog and that the additional strain of pregnancy was sufficient to produce an anemia. In work done in the same laboratories, at the Northwestern University Medical School in Chicago, hemoglobin production and the qualitative changes in the blood picture were determined in gastrectomized dogs maintained at an anemic level after measured hemorrhages.[1] Evidently in the complete absence of the stomach there is a much reduced capacity to regenerate hemoglobin after hemorrhage. Liver feeding or administration of liver extract, which is so effective in pernicious anemia, offers no hematopoietic advantages in uncomplicated gastric achylia. Furthermore, the induced anemias fail even after long periods to exhibit the characteristic histologic pictures of the pernicious type. Mullenix, Dragstedt and Bradley [1] have reached the conclusion either that the failure of the gastrectomized dog to develop pernicious anemia indicates that he is biologically different from man in this respect or that in man, as well as in the dog, achylia or gastrectomy, as the case may be, is only one of several interrelated factors in the etiology of this disease. That the gastrectomized dog has a markedly reduced hemoglobin regenerating capacity would seem to favor the latter view. In harmony with this, they add, are the clinical observations that neither achylia nor gastrectomy in man is invariably followed by pernicious anemia.

2. Ivy, A. C.; Morgan, J. E., and Farrell, J. I.: Surg., Gynec. & Obst. **53**: 611 (Nov.) 1931.

1. Henderson, Yandell: Fundamentals of Asphyxia, J. A. M. A. **101**: 261 (July 22) 1933.

THE EFFECTS OF CERTAIN FRUITS ON URINARY ACIDITY

Few fruits are good sources of energy in nutrition, and still fewer are important as sources of protein. The high recommendation of fruits as components of a well selected dietary must therefore be based on other considerations. The textbooks on dietetics see the significance of the fruits in their mineral constituents and their unique vitamin content. It has also been known for some time that, despite the presence of a considerable variety of organic acids in fruits, including formic, citric, malic, benzoic and succinic acid, many of them function as potential alkalis in the body. The fact that the acid citrus fruits could actually give rise to an alkaline urine seemed hard to comprehend at first. The organic acids are, however, burned in the organism, and the residual "ash" is alkaline in character. The property of preserving the "neutrality" of the body fluids has been lauded often to the point of charlatanism, in promoting the use of certain fruits to combat so-called acidosis. Indeed, Henderson [1] has severely criticized some of the current misconceptions of the term itself. Not all organic acids are readily burned in the metabolism. Benzoic acid notably remains intact when ingested in any form; it is excreted, conjugated with glycine, as hippuric acid through the kidneys. Tartaric acid also is not readily destroyed in the human organism. Each edible fruit really needs to be tested in the crucible of the body. For the citrus fruits and many others the facts have long been known.[2] A new study by Saywell [3] from the Fruit Products Laboratory of the University of California at Berkeley brings conclusive evidence for the potential alkalinity of pears, peaches and apricots. They increase the alkalinity of the urine, decrease the output of urinary ammonia, and increase the alkali reserve of the blood. These are criteria of the potential alkalinity of a food. Significant, too, is the observation that about 95 per cent of the organic acids of the fruits studied was actually oxidized in the body.

THE ANALGESIC EFFECT OF JAUNDICE

After four years of observation, Hench [1] has issued a report which justifies the inclusion of another clinical phenomenon in the list of the accepted but only partially understood general bodily effects of jaundice. He has encountered a number of patients the pain of whose primary condition was largely, and usually completely, relieved when jaundice appeared. The main interest of this observation is not in diseases of the liver but in such painful conditions as arthritis, fibrositis and sciatica. In some of the cases observed, the pain disappeared under the influence of icterus, although the patients had not taken any drug. Nor was the relief of pain in the accepted cases attributable to any of the many factors which may abruptly cause cessation of activity of chronic rheumatic disease: rest in bed, pregnancy, acute infection, an unrelated major operation, arsphenamine, heightened basal metabolic rate, vasomotor effects of surgical anesthesia, postoperative fever, or diet. Jaundice of the intrahepatic type, not obstructive jaundice, seemed to be the significant factor. Apparently there was usually a direct relationship between the degree of analgesia and the concentration of serum bilirubin. In some cases, however, the relief from pain preceded the appearance of an icteric tinge in the peripheral tissues. Further explanation of the mechanism involved must await further investigation, although there is some ground for believing that icterus may have a local sedative action on inflamed tissue or that it may be depressant to the nervous system. Likewise, the obvious therapeutic implications are as yet insufficiently founded to warrant dosing with bile salts for pain of any description, as Hench is careful to point out. The time may come when it may be possible "to repeat nature's miracle, to provide at will a similar beneficence by the use of some nontoxic accompaniment of jaundice, effective in available concentration."

2. Blatherwick, N. R.: The Specific Rôle of Foods in Relation to the Composition of the Urine, Arch. Int. Med. **14**: 409 (Sept.) 1914. Blatherwick, N. R., and Long, M. Louisa: J. Biol. Chem. **53**: 103 (July) 1922. Saywell, L. G.: J. Nutrition **5**: 103 (March) 1932; **5**: 519 (Sept.) 1932. Saywell, L. G., and Lane, E. W., ibid. **6**: 263 (May) 1933.

3. Saywell L. G.: Effect of Pears, Peaches, Apricots, and Dried Sulphured Apricots on Urinary Acidity, J. Nutrition **6**: 397 (July) 1933.

1. Hench, P. S.: Analgesia Accompanying Hepatitis and Jaundice in Cases of Chronic Arthritis, Fibrositis and Sciatic Pain, Proc. Staff Meet., Mayo Clin. **8**: 430 (July 12) 1933.

Association News

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts on Tuesday and Thursday mornings from 8:55 to 9 o'clock, central standard time, over Station WBBM (770 kilocycles, or 389.4 meters).

The subjects for the week are as follows:

October 24. When a Child Chokes.
October 26. Shopping for Milk.

There is also a fifteen minute talk sponsored by the Association on Saturday morning from 9:45 to 10 o'clock over Station WBBM.

The subject for the week is as follows:

October 28. What Is New in Infant Feeding.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Fifty Years for Slaying a Physician.—Eugene J. Burns, convicted of second degree murder several months ago for the slaying of Dr. William H. Godwin, Thomas, was sentenced to fifty years in the state penitentiary, September 18, newspapers report. A motion for a new trial was denied. In his first trial Burns was convicted of second degree murder and sentenced to twenty-five years' imprisonment. Dr. Godwin died in 1931 from gunshot wounds, received when he answered a call to a vacant house.

Promotions at Alabama University.—Recent promotions on the faculty of the University of Alabama School of Medicine include the following, newspapers announced:

Emmett B. Carmichael, Ph.D., head of the department of physiologic chemistry, to full professor.
Dr. Franklin S. DuBois to professor of anatomy and head of the department.
James O. Foley, Ph.D., to associate professor of neuro-anatomy.
Thomas E. Hunt, Ph.D., to associate professor of histology and embryology.
Dr. Gene H. Kistler to associate professor of physiology and pharmacology.
Marie C. D'Amour, Ph.D., to assistant professor of physiology and pharmacology.

ARIZONA

Basic Science Law in Effect.—The voters of Arizona, in a referendum election, October 3, approved the basic science act passed at the last regular session of the state legislature, and signed by the governor, March 18. Cult opponents of the act, principally chiropractors and naturopaths, relying on a provision of the state constitution, maneuvered a referendum on the measure, thus forcing it to lie inoperative pending the outcome of the election. Nonsectarian and osteopathic applicants for licenses in Arizona are examined and licensed by the board of medical examiners, but chiropractors are examined by the board of chiropractic examiners. Heretofore each board has been the sole judge of the credentials of applicants applying to it for licenses. But under the basic science act, until after the basic science board is satisfied that an applicant demonstrates a comprehensive knowledge of the basic sciences, neither licensing board can examine him. The basic sciences as defined by the act consist of gross anatomy, physiology, pathology, chemistry, bacteriology and hygiene. Persons now licensed to practice the healing art must obtain certificates from the basic science board if they desire to continue in practice, but they may obtain certificates without examination if they apply to the board before January 1 and pay a fee of $3. If any present licentiate neglects to obtain a certificate by January 1, he must pass an examination in the basic sciences to obtain one. The basic science act makes it specifically the duty of every police officer, sheriff and peace officer to investigate all supposed violations of it and to report the facts to the proper prosecuting authorities and requires the attorney general and the several county attorneys to prosecute all violations.

CALIFORNIA

Rabies.—Rabies in animals has increased in California, according to the bulletin of the state health department, September 23. Out of a total of sixty-six cases reported in August, forty-nine occurred in Los Angeles County. Other counties reporting cases were Contra Costa, Kings, Sacramento, San Diego, San Joaquin, Sonoma and Stanislaus.

Symposium on Heart Disease.—The heart committee of the San Francisco County Medical Society will hold its fourth annual graduate course on heart disease, November 22-23. No fee will be charged. Sessions will be held at the San Francisco, University of California and Stanford University hospitals, and at the new headquarters of the department of public health.

Mussel Quarantine Extended.—The California Department of Health has extended the quarantine on mussels to October 30, because cases of mussel poisoning continue to be reported. The quarantined area has also been extended to cover the entire coastal region from Monterey County to the Oregon line, excluding the bay of San Francisco. The sale or offering for sale of mussels is prohibited by the quarantine regulations.

Health Officers Elect.—Dr. Herbert F. True, health officer of Sacramento, was elected president of the Health Officers' Section of the League of California Municipalities at the annual meeting in Santa Cruz, September 18-20. Speakers before the section and the league included Dr. George G. Reinle, Oakland, president, California Medical Association, on "The Medical Profession and the Public Health"; Nina S. Estill, San Francisco, "The Calcium and Phosphorus Problem and the Average Diet"; Dr. Ray Lyman Wilbur, "The Place of the Health Department in City Government," and Karl F. Meyer, Ph.D., San Francisco, "Acute Health Problems Which Affect California."

CONNECTICUT

The Summer Round-Up.—More than 70 per cent of the 3,363 children examined during the summer round-up season, October, 1932-July 1, 1933, had physical and dental defects, many of which were considered serious enough to be referred to their family physicians and dentists for correction, according to the Connecticut *Health Bulletin*. Seventy-seven per cent of all children registered by local committees attended the round-ups for complete examination, and at 31 of the 178 round-ups all the children registered were examined. These round-ups are sponsored by parent-teacher associations and the bureau of child hygiene of the state department of health.

FLORIDA

Society News.—Dr. William C. Blake, Tampa, presented a paper on coronary thrombosis before a joint meeting of the Sarasota and Manatee county medical societies, recently, in Sarasota. ——A motion picture on "Living Tumor Growth Cells" was shown before the Orange County Medical Society, August 16.

Immunization Clinics for Negro Children.—A series of clinics to immunize Negro children against typhoid, diphtheria and smallpox has been opened by the Tampa health department, under the direction of Dr. James R. McEachern, health officer. It is hoped that, during the three months for which the clinics have been planned, at least 3,000 children will be treated.

Department of Public Health Created.—Announcement is made of the creation of a department of public health in Miami, which began functioning, September 15. Formerly all matters pertaining to health were administered under the department of public welfare through the division of health. Dr. George N. MacDonell will be director of public health. He was chief of the division of health for three years prior to his resignation in 1929. Dr. John W. Shisler resigned as head of the department of public welfare, effective August 15, to resume private practice.

ILLINOIS

Society News.—Dr. Leonard F. Weber, Chicago, spoke before the DuPage County Medical Society, September 20, on dermatology. ——The St. Clair County Medical Society was addressed in Belleville, October 4, by Dr. Millard F. Arbuckle, St. Louis, on "Bronchoscopic Diagnosis of Pulmonary Disease," and in East St. Louis, October 5, by Dr. Louis C. Boislimiere, St. Louis, "Silicosis and Silicotuberculosis."——Dr. Ralph Pemberton, Philadelphia, addressed a joint meeting of the fifth

councilor district of the Illinois State Medical Society and the Sangamon County Medical Society, October 5, on the control of rheumatism. —— At a meeting of the Williamson County Medical Society in Marion, October 3, among others, Dr. Frank J. Jirka, state health officer, Springfield, discussed epidemic encephalitis.——Dr. Charles P. Emerson, Indianapolis, spoke, among others, before the Vermilion County Medical Society, October 3, on "Lessons from Medicine of the Orient."—— Dr. John A. Wolfer, Chicago, spoke on "Surgical Management of the Jaundiced Patient" before the Peoria City Medical Society, October 3.

Faculty Presents Program.—Members of the staff of St. Louis University School of Medicine presented a program before the Adams County Medical Society in Quincy, October 9, as follows:

Dr. Cyrus E. Burford, Nephropexy and Ureterolysis as Conservative Surgery.
Dr. William T. Coughlin, Injuries to the Brain.
Dr. Ralph A. Kinsella, Encephalitis.
Dr. William E. Leighton, Evolution of Spinal Cord Surgery.
Dr. LeRoy Sante, Radiation in the Treatment of Malignant Disease.
Dr. August A. Werner, The Sex Hormones.

Alphonse M. Schwitalla, S.J., Ph.D., dean of the school, made an address at the banquet on the report of the Committee on the Costs of Medical Care.

Chicago

Dr. Jackson to Address Public Meeting.—Dr. Chevalier Jackson, professor of bronchoscopy and esophagoscopy, Temple University School of Medicine, Philadelphia, will address the Chicago Medical Society, November 1, at a meeting open to the public on "Bronchiectatic Septic Tank and Its Prophylaxis." This talk will be discussed by Drs. Samuel J. Pearlman and Carl A. Hedblom. Dr. Jackson will also speak at a reception and dinner to be held in his honor in the dining room of the Medical Arts Club before the meeting. His subject will be "Is It Advisable to Treat Post-Tuberculous Cicatricial Stenosis of the Larynx?" The dinner meeting is being sponsored by the medical society and its Aux Plaines branch with the Chicago Laryngological and Otological and Chicago Tuberculosis societies.

Changes at Loyola University.—With the opening of the autumn quarter, the following promotions on the faculty of Loyola University School of Medicine were announced:

Drs. Walter R. Bayard, Jerome W. Hayden, John C. Vermeren, Francis A. Dulak and Burton T. Gordon, clinical associates in ear, nose and throat.
Dr. Howard C. Riordan, clinical instructor in ear, nose and throat.
Drs. Patrick H. McNulty and Peter A. Nelson, Jr., clinical instructors in genito-urinary surgery.
Drs. Jacob S. Grove and Carl J. Uthoff, clinical associates in genito-urinary surgery.
Dr. Robert J. Hawkins, clinical associate in obstetrics.
Dr. William M. Hanrahan, associate clinical professor of obstetrics.
Drs. Edward H. Warszewski and Martin G. Luken, clinical professors of surgery.
Dr. Joseph T. Meyer, assistant clinical professor of surgery.
Dr. Lester E. Garrison, clinical associate in surgery.
Drs. Edward B. Kalvelage, Anthony J. Linowiecki and John P. Woitalewicz, assistant clinical professors of surgery.
Dr. John B. O'Donoghue, clinical professor of surgery.

Transfers included those of Dr. Leo J. Latz from the department of neuropsychiatry to the department of medicine as instructor, and Dr. John G. Powers from the department of anatomy to the department of medicine as assistant. New appointments were announced in THE JOURNAL, June 24, page 2024.

Society News.—The Chicago Society of Allergy was addressed, October 16, by Drs. Isadore Pilot and Isidor Harrison Tumpeer on "Focal Infection and Allergy" and "Hypergic Response of Allergic Children to Infection," respectively. ——At a meeting of the Chicago Ophthalmological Society, October 16, Drs. Agnes Beulah Cushman and Samuel I. Meyer presented reviews of the 1932 literature on trachoma, tuberculosis, retinal detachment and intra-ocular tumors, and glaucoma, respectively. —— The McDonagh Society for Clinical Research was addressed, October 20, by Drs. Paul G. Pomeroy, Ottawa, and Kamil Schulhof on "Treatment of Polyarthritis" and "An Alleged Mechanical Detector of Disease," respectively.——The Chicago Gynecological Society was addressed at its fifty-sixth annual meeting, October 20, by Gordon J. Laing, Ph.D., on "The Medicine Man," and Dr. William F. Petersen, "Meteorological Associations of Disease."—Dr. Charles H. Mayo, Rochester, Minn., among others, addressed the Chicago Association of Commerce, October 11, on "Good Health Essential for Sustained Recovery." ——A clinic was conducted before the Endocrine Club of Chicago at the Elgin State Hospital, Elgin, August 16, by Dr. James H. Hutton, Chicago, and Drs. Charles F. Read, David L. Steinberg and John T. Nerancy, Elgin.

MARYLAND

Semiannual Meeting of Medical Faculty.—The semiannual meeting of the Medical and Chirurgical Faculty of Maryland will be held at Point Lookout, October 22-23, with Dr. Robert V. Palmer, Avenue, presiding. Speakers at the general meeting include Drs. Frederick D. Chappelear, Hughesville, president, Southern Maryland Medical Society; Alexius McGlannan, Baltimore; Walter D. Wise, and Hon. J. Allan Coad, who will speak on "The Relation of the Medical Society to the General Assembly." The scientific program includes the following:

Dr. Albert E. Goldstein, A Study of Patients of the Prostatic Hypertrophy Age.
Dr. Herbert Schoenrich, Consideration of the Venereal Diseases in Medical Practice.
Dr. Frederic V. Beitler, Peroral Endoscopy—Its Practical Application in Diagnosis and Treatment.
Dr. Lay Martin, Effect of Nonspecific Desensitization in the Treatment of Disease.
Dr. Francis J. Kirby, Foreign Bodies in the Elbow Joint.

MASSACHUSETTS

Changes at Tufts.—Dr. Benjamin Spector has been promoted to the head of the department of anatomy at Tufts College Medical School, Boston, newspapers announce. Other changes include the appointment of Dr. Attilio Canzanelli as assistant professor of physiology; Dr. Max Ritvo as assistant professor in radiology, and Dr. Harold A. Chamberlin as professor of urology.

Society News.—Drs. Arthur W. Allen and Benjamin H. Ragle, Boston, discussed pitfalls in surgical and medical diagnosis, respectively, before the Essex North District Medical Society, October 18, at Andover; Dr. William H. Robey, Boston, president of the state medical society, also spoke.—— At a meeting of the Greater Boston Medical Society, October 3, Dr. Moses Paulson, Baltimore, spoke on "Present Status of Idiopathic (Chronic Nonspecific) Ulcerative Colitis."—— Dr. Howard M. Clute, Boston, spoke on the diagnosis and treatment of obstructive jaundice before the Franklin District Medical Society, Greenfield, September 12.

MICHIGAN

Society News.—Tumors of the ovaries was the subject discussed at the meeting of the Michigan State Pathological Society, October 4, in Detroit.——Dr. Loren W. Shaffer, Detroit, addressed the Saginaw County Medical Society, September 19, on the modern treatment of syphilis.——Dr. Bruce H. Douglas, Northville, was elected president of the Michigan Tuberculosis Association, September 20, succeeding Dr. Henry D. Chadwick, who recently became health commissioner of Massachusetts. Dr. Douglas was appointed to succeed Dr. Chadwick as controller of the tuberculosis division of the Detroit health department.

MINNESOTA

County Society Opposes Rezoning.—At a meeting, September 18, the City Council of St. Paul considered a petition to rezone the property at Hamline and Capitol avenues, to enable "certain people to operate what would have been known as the Hamline Clinic and Hospital." Senator George L. Siegel, representing the petitioners, stated that he was appearing for one Mr. J. J. Hicks, who is interested in the sale of "Terpezone" machines for the treatment of tuberculosis and other respiratory ailments. The rezoning was opposed by counsel for the Ramsey County Medical Society, the state board of medical examiners and the Ramsey County Public Health Association. When it became evident that the council was not in favor of the proposition, Mr. Hicks withdrew his petition. The Minnesota State Board of Medical Examiners believes that the use of "Terpezone" to treat patients with tuberculosis or any other ailment constitutes the practice of healing and as such, if used at all, can be used only by one licensed to practice medicine and healing in the state. The Council on Pharmacy and Chemistry of the American Medical Association found "Terpezone" unacceptable for inclusion in "New and Nonofficial Remedies."

MISSISSIPPI

Society News.—Speakers before the Delta Medical Society at Belzoni, October 11, included Drs. James A. Wadlington, Belzoni, and Andrew M. Wynne, Merigold, on "Glandular Therapy in the Treatment of Functional Menstrual Disorders" and "Atebrin and Plasmochin in the Treatment of Malaria," respectively.——Among others, Dr. William A. Land, DeKalb, addressed the East Mississippi Medical Society, Philadelphia,

recently, on angina pectoris.——Dr. Joseph A. Crisler, Jr., Memphis, among others, spoke before the Northeast Mississippi Thirteen Counties Medical Society in Calhoun City, September 19, on "The Decision for Surgery in Borderline Hyperthyroidism."——At a meeting of the South Mississippi Medical Society in Laurel, September 14, the speakers included Dr. Shirley C. Lyons, New Orleans, on "Treatment of Varicose Veins and Varicose Ulcers by the Injection of Sclerosing Solutions."

MISSOURI

Symposium on Encephalitis.—Epidemic encephalitis was the theme of a symposium held at a special meeting of the St. Louis Medical Society, September 1. Dr. William G. Patton discussed the recent epidemic and the Metropolitan Health Council; Dr. Paul J. Zentay, historical review; Dr. Joseph F. Bredeck, epidemiology, and Dr. Howard A. McCordock, pathology. The clinical features were discussed by Drs. John W. Eschenbrenner, Jr., Lee Pettit Gay, Goronwy O. Broun and Andrew B. Jones; Dr. Ralph S. Muckenfuss spoke on research and etiology. These presentations were discussed by Drs. James P. Leake and Charles Armstrong of the U. S. Public Health Service, William D. Collier, Hollis N. Allen, Theodore C. Hempelmann, Arthur H. Deppe and Walter A. Younge.

Society News.—Speakers before the Buchanan County Medical Society in St. Joseph, September 6, included Drs. Daniel G. Stine, Columbia, on neurasthenia; Elmer T. McGaugh, state health officer, differential diagnosis of encephalitis, and James P. Leake of the U. S. Public Health Service, encephalitis.——At a meeting of the Cass County Medical Society, September 14, Drs. Basil O. Hartwell, Drexel, and George W. Griffith, Garden City, among others, spoke on tularemia and spinal cord tumors, respectively.——Dr. Leith H. Slocumb, St. Louis, discussed the treatment of hemorrhoids before the Gasconade-Maries-Osage County Medical Society at Owensville, recently, and Dr. Paul C. Schnoebelen, St. Louis, diseases of the colon.——Among others, Dr. Winton T. Stacy, St. Joseph, spoke on toxemias of pregnancy before the Randolph-Monroe County Medical Society at Moberly, September 12.——The St. Louis Medical Society was addressed, September 19, by Drs. Neil S. Moore on "Transurethral Correction of Bladder Neck Obstruction," and Helmuth H. Kramolowsky, "Urological Diagnosis." Dr. John R. Caulk gave a motion picture presentation of a new cautery punch.

NEBRASKA

Society News.—Drs. Joseph A. Henske and Clayton G. Weigand, Omaha, addressed the Otoe County Medical Society, Nebraska City, October 9, on practical pediatrics.——Dr. Howard L. Updegraff, Los Angeles, will address the Omaha-Douglas County Medical Society, Omaha, October 24, on "Reconstruction of the Burned Face." Speakers at the meeting, October 10, were Drs. G. Alexander Young on "Symptoms and Treatment of Cases Seen in the Present Epidemic of Encephalitis"; James Dewey Bisgard, "The Fate of Transplanted Bone," and Frederick W. Niehaus, "Cardiac Therapy."

NEW YORK

District Meeting.—The seventh district branch of the Medical Society of the State of New York held its twenty-seventh annual meeting at Rochester, September 21. Scientific addresses were presented by Drs. Royd R. Sayers of the U. S. Public Health Service, on silicosis; Charles Gordon Heyd, New York, jaundice; Byrl R. Kirklin, Rochester, Minn., diagnosis of pulmonary tuberculosis; Arthur J. Bedell, Albany, medical ophthalmoscopy, and Fred H. Albee, New York, bacteriophage in wound treatment.

New York City

First Harvey Lecture.—Dr. Rolla E. Dyer of the U. S. Public Health Service, Washington, D. C., delivered the first Harvey Lecture of the season at the New York Academy of Medicine, October 19, on "Typhus and Rocky Mountain Spotted Fever in the United States."

Hospital Appointments Available.—The Hospital for Joint Diseases announces that six appointments for two years' rotating service will be available, three to begin July 1, 1934, and three to begin Jan. 1, 1935. Graduating students and graduates (unmarried men) of class A medical schools are eligible. At the completion of the two years, graduating interns are eligible for the following positions: (1) a residency in orthopedic surgery with maintenance and salary of $25 a month for the first year and $50 a month for the second year; (2) the Frauenthal Travel Scholarship of $2,400 a year for six months' study in Europe and six months in the United States, and (3) the Mr. and Mrs. Frederick Brown Research Fellowships providing an award of $2,400 each to two successful candidates. Applicants must register before December 15 and an examination will be held at the hospital, December 27.

Society News.—Dr. Donald Gordon will address the New York Surgical Society, October 25, on "Disabilities Following Trauma of the Extremities."——Dr. Henry E. Sigerist, Baltimore, gave an address on "The Medical Profession Through the Ages" at the New York Academy of Medicine, October 18.——Dr. Walter B. Cannon, Boston, addressed the Society for the Advancement of Gastro-Enterology, October 4, on "The Relation of the Nervous System to the Function of the Smooth Muscle."——Drs. Irving S. Wright and Abram Wilbur Duryee addressed the Medical Association of the Greater City of New York, October 13, on "Therapy of the More Common Peripheral Vascular Diseases" and "Present-Day Methods of Diagnosis and Study of Peripheral Vascular Disease," respectively.——George L. Clark, Ph.D., professor of chemistry, University of Illinois, Urbana, addressed the New York Roentgen Society at the New York Academy of Medicine, October 16, on "The Application of Roentgen Rays in Nonmedical Fields."——The Physicians and Allied Professional Political League was recently organized for the purpose of furthering public legislation and measures indispensable to the welfare of the medical and allied professions.——Dr. George H. Bigelow, Boston, addressed the Medical Society of the County of Queens, September 26, on "Fads and Fancies of Health." Dr. Edward M. Livingston gave an afternoon lecture before the society, October 6, on abdominal pain.

NORTH CAROLINA

Society News.—Dr. John F. Brownsberger addressed the Buncombe County Medical Society, Asheville, August 21, on "Hydrotherapy and Physiotherapy in Medicine and Surgery."

New Dean at State University.—Dr. Charles S. Mangum, professor of anatomy at the University of North Carolina Medical School since 1905, has been appointed dean to succeed Dr. Isaac H. Manning, resigned. Dr. Mangum, a graduate of Jefferson Medical College, Philadelphia, has been associated with the university for thirty-seven years, having served as professor of physiology and materia medica for nine years before his appointment in anatomy. Dr. Manning had been dean since 1905 and had also previously served several years as professor of physiology. He will continue as professor of physiology. Dr. Manning is this year president of the Medical Society of North Carolina.

NORTH DAKOTA

Personal.—Dr. Harry D. Benwell, Grand Forks, has been appointed special lecturer in physical diagnosis in the University of North Dakota School of Medicine and Dr. Donald B. Simonson, instructor in physiology and pathology.

OHIO

Health at Columbus.—Telegraphic reports to the U. S. Department of Commerce from eighty-five cities with a total population of 37 million, for the week ended October 7, indicated that the highest mortality rate (15.8) appeared for Columbus and the rate for the group of cities, 9.8. The mortality rate for Columbus for the corresponding week of 1932 was 11.5 and for the group of cities, 9.8. The annual rate for eighty-five cities for the forty weeks of 1933 was 10.9, as against a rate of 11.1 for the corresponding period of last year. Caution should be used in the interpretation of weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have large Negro populations may tend to increase the death rate.

Cleveland Academy News.—A new section on practice of medicine was inaugurated by the Cleveland Academy of Medicine, October 11, with addresses on hypochromic anemia, by Dr. Russell L. Haden, and on treatment for pernicious anemia by Drs. Harold H. Brittingham and Harley A. Williams. The society has announced a competition for interns for the best report of a case or of research work submitted to a committee of the clinical and pathologic section. The winners will present their reports orally at the annual meeting of the section, December 1, which has been designated "Intern Night." A course of lectures on diseases of the gastro-intestinal tract has

been arranged by the academy to begin October 27 and continue on Fridays to April 13. This is the second course of the kind sponsored by the academy. The registration fee is $1. Dr. Richard Dexter is chairman of the committee in charge.

OREGON

State Medical Meeting at Portland.—The fifty-ninth annual session of the Oregon State Medical Society will be held in Portland, October 26-28, at the Hotel Benson. At the opening general session there will be a symposium on cancer of the breast by Drs. Frank R. Menne, Warren C. Hunter and John Earl Else, all of Portland. The second day will be devoted to discussion of medical economics as follows:

Dr. Samuel G. Henricks, Portland, A New Deal in the Relationship of the Physician to Organizations Rendering Free or Part-Pay Medical Care.
Mr. Clyde C. Foley, executive secretary of the society, The Ability of the People of Oregon to Pay for Medical Care.
R. W. Nelson, president, Oregon Council of Hospitals, Experiments in Hospital Insurance.
R. R. Jackson, claim agent, Oregon State Industrial Accident Commission, Medical Phases of Workmen's Compensation from the Viewpoint of the Commission.
Dr. Ronco G. Leland, Chicago, director, Bureau of Medical Economics, American Medical Association, The Insurance Principle in the Practice of Medicine.
Dr. Eugene P. Owen, Portland, The Aims, Organization and Operation of Professionally Controlled Group Health Associations.

At the final general session speakers will be Drs. Karl H. Martzloff, on "Functional Uterine Bleeding"; Joseph A. Pettit, "Practical Points in the Diagnosis of Lesions of the Oral Cavity"; Thomas M. Joyce, "Small Intestinal Tumors," and Goodrich C. Schauffler, "An Unusual Paralytic Syndrome in Pregnancy." All these speakers are residents of Portland. The medical and surgical sections will hold their meetings Thursday afternoon, October 26. The annual golf tournament will be played Saturday afternoon, followed by a dinner at the Multnomah Golf Club. At the annual banquet Friday evening Stephen B. L. Penrose, D.D., president of Whitman College, Walla Walla, will make an address on "The First American Doctor of the Pacific Coast."

PENNSYLVANIA

Hospital News.—Dr. Maurice C. Pincoffs, Baltimore, delivered an address at Mercy Hospital, Pittsburgh, September 26, on "Clinical Aspects of Abrupt Rises in Blood Pressure." The occasion was a celebration of "Mercy Day."——Citizens of Berwick oversubscribed a campaign for $35,000 to prevent closing of the Berwick Hospital, July 20.

State Medical Election.—Dr. Moses Behrend, Philadelphia, was chosen president-elect of the Medical Society of the State of Pennsylvania and Dr. Donald Guthrie, Sayre, was installed as president at the recent annual session in Philadelphia. Vice presidents were elected as follows: Drs. George C. Yeager, Philadelphia; Charles W. Eisenhower, York; William G. Tillman, Easton, and George B. Woods, Washington. Dr. Walter F. Donaldson, Pittsburgh, was reelected secretary for the fourteenth year. The next meeting will be held in Wilkes-Barre.

Philadelphia

University News.—Dr. Jacob Parsons Schaeffer, professor of anatomy, Jefferson Medical College, was the speaker at the opening of the eighty-fourth annual session of the Woman's Medical College of Pennsylvania, September 20. His address was on "The Scope and Method of Modern Anatomy in the Medical Curriculum." New appointments at the college include: Drs. Helen K. Grace, assistant in clinical gynecology and bacteriology, and Regina M. Downie, assistant in clinical gastro-enterology.

Society News.—Drs. George E. Pfahler and Peter J. Kapo presented a paper on "Treatment of Cervical Adenitis by Means of Roentgen Rays" before the Philadelphia Roentgen Ray Society, October 12.——Drs. Joseph B. Wolffe and Harold F. Robertson presented an address on "Experimental Air Embolism," with motion pictures, among other speakers at a meeting of the Pathological Society of Philadelphia, October 12.——The Philadelphia Pediatric Society is offering an award of $100 for the best original study pertaining to pediatrics, submitted by a physician.

RHODE ISLAND

Personal.—Dr. John Champlin, Jr., Westerly, was elected chairman of the state public health commission for the next two years at the biennial session in September. The commission rotates the chairmanship among its members. Lester A. Round, Ph.D., was reelected state director of public health.

Society News.—Drs. Frank A. Cummings and Isaac Gerber addressed the Providence Medical Association, October 2, on "The Colon as a Focus of Infection" and "Primary Carcinoma of the Lung," respectively.——Dr. Louis E. Phaneuf, Boston, addressed the Washington County Medical Society, Westerly, October 11, on "Pelvic Inflammation in Women."

VIRGINIA

State Medical Meeting at Lynchburg.—The sixty-fourth annual session of the Medical Society of Virginia will be held in Lynchburg, October 24-26, under the presidency of Dr. James Carroll Flippin, University, with headquarters at the Virginian Hotel. Drs. Dean Lewis, President, American Medical Association, and Louis Hamman, both of Baltimore, will be guest clinicians and speakers at the opening general session Tuesday evening, October 24. A symposium on diseases of the stomach will be presented Wednesday morning by Drs. William R. Bond, Richmond, who will speak on physiology of the stomach; Blanton P. Seward, Roanoke, differential diagnosis; Alexander F. Robertson, Jr., Staunton, medical treatment; Charles Bruce Morton, University, surgical treatment. Among Virginia physicians who will appear on the program are:

W. Ambrose McGee, Richmond, Importance of Body Build in Determining Ideal Weight.
William H. Goodwin, University, Endometriosis with Reference to Intestinal Implantations.
John E. K. Flannagan, Salem, State Medicine Problems.
Caleb S. Stone, University, and Hubert B. Holsinger, Farmville, Diagnosis and Treatment of Gas Bacillus Infections.
Frank S. Johns, Richmond, Surgery of the Biliary Tract.
Marshall J. Payne, Staunton, Early Diagnosis of Primary Malignant Bone Tumors in Early Life.
John Shelton Horsley, Jr., Richmond, Further Observations on the Continuous Intravenous Injection of Dextrose in Ringer's Solution.
Thomas W. Murrell, Richmond, The Problem of Hair Growth.
John A. Pilcher, Jr., Roanoke, Management of Cross Eyes in Children.
Robert P. Hawkins, Jr., Clifton Forge, Ureterosigmoid Anastomosis.

The Virginia Pediatric Society will hold its annual meeting at a luncheon, October 25, with Dr. James A. Lyon, Washington, D. C., as guest speaker, on diagnosis and treatment of rheumatic heart disease in children.

GENERAL

Society News.—Dr. John M. Wheeler, New York, was installed as president of the American Academy of Ophthalmology and Otolaryngology and Dr. Wells P. Eagleton, Newark, N. J., was chosen president-elect at the annual meeting in Boston in September. A silver platter was presented to Dr. Secord H. Large, Cleveland, who completed twenty-five years as controller of the academy.

Change in Status of Licensure.—The Pennsylvania Board of Medical Examiners reports:

Leigh B. Shiffer, Easton, license reinstated, August 30. The license had been suspended, July 1, 1926.

The Board of Medical Examiners of the State Education Department of New York has recently reported the following action on licenses:

Dr. William A. Robison, Medina, license revoked in February; case appealed to a higher court.
Dr. Louis H. Pinco, Yonkers, license suspended in April for one year for fraud and deceit in practice in connection with a cancer "cure."

Bequests and Donations.—The following bequests and donations have recently been announced:

Friends' Hospital, Philadelphia, $10,000 by the will of Mrs. Alice H. Yarnall.
Hahnemann Hospital, Philadelphia, $5,000 from the estate of the late Miss Alice Hancock.
Woman's Homeopathic Hospital, Philadelphia, $5,000 from the will of John W. Shuler; and a deferred bequest of $10,000 from that of Alice Hancock.
Phoenixville Hospital, Phoenixville, Pa., and Pottstown Hospital, Pottstown, Pa., $10,000 each by the will of Samuel P. Heister on the death of his daughter-in-law, Mary B. Heister.
Montgomery Hospital, Norristown, Pa., $5,000 by the will of the late Dr. William G. Miller for a free bed in memory of his brother, and a $10,000 trust fund for a William G. Miller room.
House of Rest at Spuyten Ridge, Yonkers, N. Y., $5,000; Northern Westchester Hospital, Mount Kisco, $3,000 under the will of the late Mrs. Florence Macy Sutton.
Montefiore Hospital, New York, $25,000, and Mount Sinai Hospital, New York, $10,000 by the will of the late Michael Gernsheim.

CORRECTION

Prolapse of Intestine Through Opening in Omentum.—In a clinical note in THE JOURNAL, September 16, Dr. Antonio Gentile considered the case which he reported to be the seventeenth of its kind in medical literature. It has been called to his attention now that Dr. Edward H. McLean reported a similar case in *Northwest Medicine*, April, 1932, page 193. Dr. Gentile's case would therefore be, he says, the eighteenth case of this kind in the literature.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept. 30, 1933.

The Noise Evil: Organized Action at Last

The ill effects, on the well as on the sick, of the noises of modern civilization, particularly those due to automobiles, have been pointed out from time to time. The evil has reached such a pitch that at last corporate action is being taken. A new society called the Anti-Noise League has been formed by some well known public men, including leaders of the medical profession—Lord Horder, Sir James Purves-Stuart (neurologist) and Dr. Dan Mackenzie (laryngologist and otologist). The league states that there is need for immediate action to mitigate the noise evil, especially the unnecessary hooting of automobiles in residential areas. They aim at enlisting such a force of public opinion as will induce the authorities to regulate by law forms of noise that are manifestly injurious to the comfort, health and repose of the community at large, as well as being damaging to efficiency and to the amenities of numerous urban localities. They invite all who suffer from the infliction of unnecessary noise to communicate with them. The ordinary membership fee of the league has been placed at the nominal sum of 30 cents.

Another important movement with the same end has come from the British Association for the Advancement of Science. At the recent annual meeting valuable papers were read describing the progress that has been made in the reduction of noise, especially in connection with aircraft. The association set up a committee to consider noises that it is most important to reduce and to collect information available for this purpose. Members of the public are invited to send their considered opinions as to the noises that cause them most discomfort and inconvenience to the honorary secretary, who is a professor of engineering. The committee can then select the subjects that appear to be of greatest importance and collect and review the knowledge available. It will in most instances be possible to indicate the amount of improvement that can be effected without serious loss of efficiency. If sufficient funds are available from manufacturers, it is hoped to arrange a practical demonstration at the meeting of the association next year.

A Medical Council Bill for All India

An all-India medical council bill has been passed by the legislative council of India to secure a uniform standard of qualification for physicians throughout India and to arrange for reciprocity abroad. As reported before, the General Medical Council of Great Britain (the body that controls medical education and qualification for practice) in 1930 withdrew recognition of Indian medical qualifications, because it was not satisfied with the standard of examination and was refused facilities for inspection. As India was in a ferment of political agitation, to a large extent anti-British, the politicians ignored the good reason for the council's withdrawal of recognition and represented it as simply a slight by the British on India. The resentment aroused has taken the form of retaliation in the present bill, which provides that if after the lapse of four years recognition of Indian qualifications is still refused, British physicians may no longer practice in India. It may be pointed out that Indian physicians continue to practice in Great Britain and that those who have British qualifications have exactly the same legal status as Englishmen. The withdrawal of the recognition of Indian qualifications only forbids the registration of qualifications obtained in India since 1930 and prevents their holders obtaining the legal rights of qualified physicians in Great Britain. To all intents this means only the loss of power to sue for debts for medical attendance and inability to sign death certificates. If such persons desired to practice they could do so on the same terms as osteopaths and other unqualified practitioners. Of course in a dependency of no other great power in the world could such a proposal as comes from India be possible.

Centenary of the Birth of Charles Bradlaugh

Lord Horder, who is president of the Birth Control League and leader of the movement in the medical profession, proposed the memory of Charles Bradlaugh at a dinner to celebrate the centenary of his birth. Bradlaugh may be regarded as the pioneer of birth control in this country. Lord Horder said that his handling of birth control left scarcely anything to add even after fifty years. By clear thinking and lucid expression, Bradlaugh made great contributions to the subject. What had been done since? In 1930 the Manchester police seized copies of a book called "Parenthood" with intent to prosecute the author and publisher. It was written by a competent London physician and the review, which stated that the book should meet the need of a good practical handbook on birth control with reliable data, was quite a fair presentation. The process of law made possible all legal anachronisms, given sufficient stupidity on the part of the citizens who actuated these processes. Only three years ago no one could obtain any advice on contraception at any maternity center or hospital in the country that was state aided. After considerable pressure and faced with the terrible problem of maternal mortality, the ministry of health sanctioned the giving of such advice, but only in the case of women suffering from organic disease and in cases in which the bearing of children was likely to endanger life. The dissemination of that knowledge to the industrial classes, which Bradlaugh rightly considered essential, was still denied, though that knowledge was open to the well-to-do and the educated.

Automobile Accident Due to Effect of Insulin

The case was reported some time ago of a physician who was convicted of driving an automobile while under the influence of alcohol. He had diabetes and his defense was that his condition was due to insulin treatment. He appealed against the conviction but died from the disease before the case came on again. Insulin has now been the cause of conviction, without any question of alcohol. A man with a clean record as a driver drove his automobile almost at a walking pace between two lines of traffic and collided with three vehicles on the off side. The drivers shouted at him but he did not stop. He then collided with a stationary van, his car skidded and he came to a standstill on the pavement. A policeman found him in a dazed condition, only partly conscious of what was said to him. He had diabetes and the police surgeon certified that he was under the influence of insulin and unfit to drive a car. Dr. George Graham, an authority on diabetes, gave evidence that the patient would generally have ample warning of any reaction from insulin and that his condition on the day of the accident might be due to the fact that improvement was taking place more quickly than he realized. The physician pleaded guilty to the charge of driving while under the influence of a drug, which is an offense under the road traffic act. He was fined $1 and ordered to pay $42 costs and his license was suspended for five years, but he was informed that he might apply for revision of the suspension after six months if he was medically fit.

Failure of Claim for Fracture of Jaw in Extraction of Tooth

The annual report of the London and Counties Medical Protection Society contains what is considered an important test case, in that it establishes that, however careful an operator

may be, fracture of bone may occur. During the extraction of a septic third lower molar tooth from a woman, the jaw was fractured horizontally backward from the apex of the tooth. The patient was removed to a hospital, where the fracture was set. After her discharge she consulted her lawyers, who wrote to the dentist claiming damages. The matter was investigated by the dental experts of the society, who were satisfied that the methods of the dentists were in every way satisfactory, and it was decided to repudiate liability. At the trial the verdict was given for the dentist. The judge in giving judgment said that in his opinion the defendant had done everything that he possibly could, before and during the operation, to prevent such an occurrence, and that what had happened was through no fault of his.

PARIS

(From Our Regular Correspondent)

Sept. 26, 1933.

Undulant Fever in France

Malta fever has become a disease with ever increasing incidence. Cases are developing today in nearly every part of France. Of particular importance is the article of Ranque and Senez pertaining to the serodiagnosis of the disease. In their laboratory at Marseilles, from 1919 to 1932, they diagnosed 2,800 cases of undulant fever originating in the Provençal region of France. They performed 16,000 Wright seroreactions and conclude that this test constitutes the surest means of diagnosis if it is positive at 1:400 or above, emulsions of cultures of Micrococcus melitensis titered and then sterilized by iodine being employed. If the serodiagnosis is negative on the fifth day of an infection, undulant fever can be ruled out. In the doubtful cases, a second test should be made ten to fifteen days after the first. Undulant fever, which, in this region, showed a rapid increase up to 1929, has since then become less common. The curve of monthly morbidity reveals, for each of the twelve years, a marked recrudescence toward the end of the winter and during the spring. The endemic foci are gradually becoming smaller and show a tendency to shift toward the north. Morbidity in man and abortions in animals continue to follow a frankly parallel evolution. Alimentary contagion appears to be much less frequent than contagion through contact, which at present is the most common form. Undulant fever tends to become more and more a disease occurring chiefly in farm laborers. At a session of the medical society of Marseilles, devoted to this subject, D. Olmer emphasized two points: 1. A negative sero-agglutination does not exclude the diagnosis of undulant fever. 2. Undulant fever, while widespread in the rural sections, is comparatively rare at Marseilles, and when it occurs it is more commonly in the vicinity of the abattoirs. According to J. Pieri, quinine bismuth iodide is a chemotherapeutic treatment that has given good results. Benoit moved that this disease be classified among the occupational diseases. The medical society of Marseilles adopted a resolution to that effect. J. R. Paillas reported the case of an adult, who had suffered from undulant fever for eight months, the disease having failed to yield to any of the therapeutic measures employed, but who recovered after an intestinal hemorrhage. It is possible that the shock was a factor in this recovery. Mr. Roger also is convinced that direct contamination through contact with sheep or goats is at present much more frequently the cause of undulant fever than the consumption of milk or cheese. At Tunis, Dr. Setbon tried hypodermic injections of milk derived from goats known to be infected. He administered this milk, sterilized, in doses of 2 cc. for children and 5 cc. for adults, increasing the dose to 10 cc. or more, according to the age and the tolerance of the patient. As a rule, from eight to ten injections suffice—given daily if they are well borne, otherwise at wider intervals. The reactions are mild and rare. Mr. Vidal has remained faithful to the treatment that he has used for many years, which consists of intravenous injections of arsphenamine, in doses of from 0.004-0.006 Gm., administered twice a week, which gave 80 per cent of good results.

The Work of the Grancher Society

Dr. Armand Delille, general secretary of the Oeuvre Grancher, founded in 1901 by Grancher, recently rendered an account to the academy on the present status of this foundation, whose range of activity is increasing year by year. It counts at present chapters in forty-five departments of France. In 1932, these forty-five chapters selected 6,000 children who were still healthy but who had been exposed to tuberculous contagion by a bacilliferous parent. In order to be accepted, the roentgenograms of children must not reveal any parenchymatous or glandular changes. The children taken from their homes are placed in healthy peasant families until the disappearance of the cause of familial infection, where they are under the regular supervision of health officers of the foundation. The Oeuvre Grancher relies chiefly on private contributions for its support and, while it receives subsidies from the central government, these constitute a small proportion of its budget. The results accomplished by the society tell their own story. Morbidity from tuberculosis among the children taken from homes is low (0.3 per cent), while the mortality from tuberculosis is under 0.1 per cent. Placement in families is much less expensive than placement in institutions and contributes effectively to a restoration of their strength.

International Congress of Nurses

The International Congress of Nurses, which comprised representatives from twenty countries, assembled recently in Paris, under the chairmanship of Mlle. Chaptal, founder of the training schools for nurses, in France, and today president of the international committee of nurses. Mr. Daniélou, minister of public health, presided at the opening session. There were addresses by Prof. Léon Bernard, Dr. Jules Renault, Marquis de Lillers (vice president of the league of Red Cross societies), Miss M. Musson (president of the general council of the nurses of England and Wales), Miss Anny Brandt (German deaconess) and others. Another session was presided over by Miss Clara Noyes, director of the nursing service of the American Red Cross. An afternoon session was devoted to the study of the following questions: the profession of nurse and mental hygiene; the morale of the nursing profession from the legal point of view; the responsibility of the nurse as compared with that of the physician; the proportion of nurses with relation to the population and the extent of territory; the effects of the universal economic crisis on the nursing profession. The congress closed with a visit by its 2,500 participants at the Hôpital Foch, a model hospital that is being erected at the gates of Paris, overlooking the magnificent panorama of the Bois de Boulogne and Paris. The hospital is reserved for the middle classes: scientists, artists, civil service employees, retired army officers, and the like. The hospital comprises eight stories and has 300 rooms, with modern equipment, a maternity clinic, an isolation pavilion and a training school for nurses that will accommodate 150 pupils. The congress was then transferred to Brussels, where its sessions were continued. Before their adjournment, the conventionists decided on the erection of a memorial to the nurses of France, which will be placed at Pierrefonds, where a French nurse, Mlle. Jalaguier, was killed during the war.

Georges Hayem's Death

Prof. Georges Hayem died, at Paris, from an attack of pleurisy, at the age of 92. Born in 1841, he had a brilliant career, becoming in quick succession hospital physician and professor at the Faculté de médecine. In 1886 he was chosen a

member of the Academy of Medicine, of which he later was president. His clinical lectures, held in the Hôpital St. Antoine, were attended, up to the time of his retirement, by a large group of French and foreign students. He was an excellent clinician, but in his publications he always assigned an important place to the laboratory. His researches on the blood are still widely read. He was the father of modern hematology. In spite of his age, he continued in vigorous health and never missed a session of the academy. He had a magnificent old age (exempt from infirmities), in which he found pleasure in devoting himself to the engraving of medallions, an art in which he displayed unquestionable talent. He executed a large number of medallion portraits of his most eminent confrères.

BERLIN

(From Our Regular Correspondent)

Sept. 4, 1933.

Estimation of Duration of Treatment

Because of the expense involved, the krankenkassen are interested in determining the average duration of clinical treatment. While, for various reasons, such estimates must be looked on with great caution, it may not be out of place to give some of those found in recent reports of investigations of the krankenkassen. The average duration of hospitalization and convalescence following uncomplicated surgical operations, according to these computations, is from eight to ten days. In appendicitis, without abscess formation, dismissal from the hospital can be effected on the tenth day, at the latest. In operations for hernia, a hospital stay of about fourteen days and incapacity to work extending over from three to four weeks can be expected. In operations on simple goiters, eight days of sickness need not ordinarily be exceeded, while the regaining of working capacity will require from two to three weeks. Removal of tumors of the breast necessitates from eight to ten days for completion of the healing process, and the restoration of working capacity requires generally about four weeks, from the beginning of treatment, without postoperative irradiation. In operations on the stomach, dismissal from the hospital can usually be effected about three weeks after the operation. In uncomplicated cholecystectomy, the clinical treatment is completed two weeks after the operation; in drainage of the common duct, in about three to four weeks. The clinical after-treatment in hemorrhoidal operations lasts about two weeks. The deduction appears justified that, in typical surgical interventions, the hospitalization can usually be limited to from two to three weeks. The duration of treatment in urologic disorders is usually longer, owing to the fact that more than a single organ is involved. In urologic cases, early hospitalization nearly always proves to be good economy, because many superfluous measures commonly employed in ambulant therapy can be omitted. As approximate values of the duration of hospitalization one can assume in: renal calculosis, with bilateral involvement, 68.3 days in men and 86.7 days in women; unilateral nephrolithiasis, 28.3 days in men and 33.4 days in women; ureteral calculus, 25.1 days; vesical calculus, 26.8 days; pyelonephritis, 29.45 days; perinephritis and periureteritis, 33.45 days; urinary infections in female patients with dysuric symptoms, 27.5 days; urethral stricture, 50.3 days; renal tuberculosis, 53.6 days; hydronephrosis, 31.5 days; renal tumors, 23.1 days; benign bladder tumors, 38 days; cancer of the bladder, 40.9 days; cancer of the prostate, 55.1 days, and hypertrophy of the prostate, 40.36 days.

The New State Medical Academies

For years, some cities of Germany had what were called "sociohygienic academies," which served for the special training of district physicians, communal physicians and panel physicians. In place of all these academies, two state medical academies have been created, one in Berlin and one in Munich, which are under the direction of the Prussian ministry of the interior and the state commissar for the public health service in Bavaria, respectively. These two academies will be opened in November and will constitute the recognized institutions in which all physicians who are in the public service will, in the future, be trained for their new duties in the fields of racial biology and demographic science. The academies will likewise give continuation courses in all fields of medicine connected with the fulfilment of national tasks. The director of each academy will appoint a manager and a directive council. Concerning the further tasks of the academies, the following information has been offered: Formerly, the individual's welfare was the keynote of the physician's activities. There developed the struggle of "all against all," which resulted in misery for the mass of the people. A more enlightened view and a prompt return to the firm foundations of the state will insure our extrication from this state of wretchedness. This prospect opens up new problems for the whole medical profession, which shall regard itself henceforth not so much as a liberal profession but as a profession that has tasks to fulfil in the service of public health. This applies more particularly to the physicians who are in the public service. The physicians must raise the new thoughts and ideas of people and nation, in the sense of a natural community of persons closely related by race and psychic characteristics, from the depths of unconscious feeling and transmute them into a principle by which to guide their practical and political conduct; for a firm government presupposes the existence of a cultured people free from hereditary taints. This goal requires the introduction of new forms of education and schooling. It is with these thoughts in view that the state medical academies have been established and equipped.

Since a certificate showing regular attendance at this institution of higher learning must be presented by all candidates for district physician and also for the communal and the welfare service, only such applicants will be considered as have acquired the necessary preliminary training in a state medical academy. A guaranty is furnished that only such applicants will be accepted as state and communal physicians as are fairly familiar with the requirements of national public health administration. A special course of study is planned for each semester, the courses extending over a period of three months. The first course of the state medical academy of Berlin, which has the character of a college, will comprise: race hygiene and demographic science; general social hygiene; special welfare work in connection with the public health service, and social pathology; organization and administration of social services and the laws pertaining thereto; protection against air and gas menace; drill courses; practical welfare work and inspections.

Convalescent Serum for Treatment of Poliomyelitis

An announcement of the Prussian ministry of the interior states that it has been decided to continue the arrangements provided for the securing, keeping in stock, storing and dispensing of serum of convalescents from poliomyelitis. It was recommended that experts be summoned immediately in order to establish as quickly as possible the nature of suspected cases of the disease, and that the indications for the use of the serum be determined by consultants acting in an honorary capacity. This method proved its value in Hamburg in 1932. With regard to the preparation of the serum, it was recommended that the blood donors needed be supplied by a special organization. As far as possible, only the serum of persons who recovered from a manifest poliomyelitis from five weeks to three months previously should be used. Provision should be made for compensating the donors. In case of an increased demand for

serum, two large serum laboratories will keep considerable supplies of convalescents' serum in stock ready for shipment. The blood group to which the patient as well as the donors belong must be precisely established. The district physician should interest physicians in this therapy by lectures and other suitable publicity measures. In the case of patients who are already in the paralytic stage, great caution must be exercised in the use of serum, because of the danger of exacerbation. The intravenous and intralumbar routes should not be employed for the injection of serum. The scientific institutes throughout the country are requested to take up researches concerning the dissemination of poliomyelitis by healthy virus carriers; the duration of infectiousness of patients; the possibility of the transmission of an infection by food products, and the relative action of serums derived from patients after the lapse of varying periods since the attack of the disease.

Antivaccination Societies Disbanded

As is well known, in spite of the evident excellent results of compulsory vaccination against smallpox, as prescribed by law in the German reich, there is still a group of persons vigorously opposing vaccination against smallpox. The ministry of Saxony has recently disbanded the antivaccinationists' societies, including the Impfgegner-Aerztebund in Dresden, for the territory of the state of Saxony, and has prohibited, at the same time, all public activities in opposition to vaccination against smallpox. A penalty will be imposed on any person who actively opposes such vaccination. The headquarters of the disbanded societies are being closed and all their equipment is being confiscated.

Number of War Injured Entitled to Aid

This year's census of the war injured and the survivors of participants in the war gave a total of 808,574 war injured entitled to receive aid. The number of war injured, which in 1931 numbered 838,360, decreased from 1931 to 1932 by about 18,000, and from 1932 to 1933 by 11,829. The decrease was due chiefly to deaths (8,912). The number of survivors who receive pensions and special aid amounts now to 893,582. The number of widows shows a slight decline. The number of orphans shows, as was expected, a further marked decrease.

Welfare Aid for the Sick

During the calendar year 1931 (or, in some cities, during the fiscal year 1931-1932), weekly benefits to the sick were granted by forty-one cities if the income did not exceed from one and one-half to two times the amount of general welfare aid and by five cities if the income did not exceed from two and one half to three times the amount of general welfare aid; other cities followed other plans. In twenty-three cities the weekly benefits of the krankenkassen were paid out in the welfare centers for gravidas and puerperants. In nineteen cities arrangements were made with midwives in connection with the discovery of gravidas. Courses of instruction for expectant and young mothers were given in only thirty-nine cities. In the follow-up infant welfare service, family welfare workers were employed in seventy-three cities and special welfare workers in twenty-one cities, contact having been made by the service with 77 per cent of the new-born. Young children were sent by seventy-six cities to recreation centers; young children received supplementary meals in fifty cities. The tuberculosis welfare service performed nearly 700,000 medical examinations and about 440,000 roentgenologic examinations and referred about 123,000 examinees to attending physicians and to therapeutic centers. Out of about 185,000 persons who appeared at the consultation centers for venereal patients, 35 per cent were found to be ill. In each thousand inhabitants, 3.1 persons were being cared for at the end of the year by the welfare aid service for venereal patients. Of the persons cared for by the welfare aid service for cripples, 13 per cent were more than 18 years old; 83 per cent of the persons summoned for examination appeared in the centers of the welfare aid service for cripples. Eight per cent of the alcohol addicts cared for were women. Only nineteen cities had special welfare arrangements for cancer patients. Forty-four cities have welfare aid services in the hospitals; of these, twenty-five have special consultation centers. Whereas in the other branches of the welfare aid service the management is chiefly in the hands of physicians, here independent welfare workers predominate; in twenty-one cities about 55,000 consultations were given. The marriage consultation centers were used to only a slight extent. Consultation centers for athletic sports, which were established at first in sixty-six cities, had to be abandoned in ten cities. In thirty-three cities these consultation centers were available for every one, but in other cities there were restrictions, some being intended only for members of athletic associations. Examination fees were exacted for marriage consultation and consultation in venereal disease in only one and three cities, respectively, and for consultation on athletic sports in twelve cities. In seventy-four of these cities the reported branches of the welfare aid service required the expenditure of 27,500,000 marks (nearly $10,000,000, current exchange), about 40 per cent of which was for personnel.

BELGIUM

(From Our Regular Correspondent)

Aug. 25, 1933.

The Brussels Medical Convention

The thirteenth session of the Journées médicales de Bruxelles was devoted to the subject of syphilis. Monday and Tuesday mornings were given over to clinics or to demonstrations in hospitals and clinics. On Sunday and on Monday and Tuesday afternoons papers were read at the University of Brussels. The queen attended the opening session, and Count Carton de Wiart gave the address of welcome to the foreign delegates. Recalling that he presided, in 1921, at the first session of the Journées médicales, the minister pointed out that the organizers, who wished to bring about a closer relation between practitioners and investigators, had realized their purpose. After exalting the medical profession as the most noble and useful of the professions, he outlined the program of the thirteenth session. The minister of health surveyed the results secured by syphilology, to which the Belgian scientists Bordet and Gengou made important contributions. Not only through research has Belgium contributed to the crusade against syphilis but also through an energetic national campaign. The opening session closed with an address by Mr. Charles Saroléa, which dealt with the physician and medicine in European literature.

At the close of the Journées médicales, the Palais des Thermes, at Ostende, was dedicated. The Palais des Thermes is a new institute of physical therapy and seaside treatment, which gives Ostende a medical organization that is unique in Europe. Dr. A. Depoorter, medical director of the institute, gave an address on the work that is to be carried out at the Ostende mineral springs.

Among the more important presentations was "Syphilis in Earlier Times and Today," by Dr. Spilmann. One found formerly a fairly uniform distribution of endemic syphilis in various countries. At present that no longer seems to be the case. Denmark and Belgium have now but little syphilis, whereas France observes no decrease of the disease. Spilmann questions, however, the value of many statistics, which are necessarily incomplete, even in the large cities. It is well known that many practitioners and private institutes do not report their statistics. Furthermore, there are many unknown

quantities in this field: biotropism, regional influences, racial influences and seasonal influences, which may increase the virulence and aid in the dissemination of the disease.

VARIATIONS IN REACTIONS TO SYPHILIS

Dr. B. Dujardin discussed "The Question of Terrain in Syphilis." It is surprising that the same micro-organism may give rise to such diverse reactions in two different organisms. One never sees two cases of typhoid or two cases of tabes that develop in exactly the same manner. Syphilis has a secondary stage, which decides the later evolution of the infection; or the patient enters an allergic stage that is manifested by a gumma, for example, or it will develop in an anallergic direction, ending finally in dementia paralytica. While the cause of these differences in cases is not known, it is possible to surmise what takes place. Experience has taught that the skin reactions commonly bring relief to conflicts that occur in the deeper tissues (cutaneous reactions to tuberculin; the Schick reaction). Whether it is an unsensitized or a sensitized individual, the reactions of the skin to an antigen vary greatly in different individuals. Some will give no reaction, others will present a severe local or general shock. If one subjects syphilitic patients to these tests, it will be observed that tabetic patients give no reaction (anallergic) but that patients with tertiary symptoms show marked reactions. Between these two extremes there are a multitude of intermediate reactions.

Even in the secondary stage, one may observe this variation in reactions. The syphilitic patient in the secondary stage who is going to become allergic has not always been allergic. In contrast with the syphilitic patient in the secondary stage, a tabetic patient (anallergic) may become sensitized in some peculiar and sudden manner, as by ocular neuritis. Only the female presents leukomelanoderma, which, with its frank adenopathy, requires months to form. Likewise osteitis and osteoarthritis are found more often in females. On the other hand, in anallergic manifestations of syphilis, such as dementia paralytica, one observes ten times as many cases in men as in women. Similar observations have been made with regard to congenital syphilis. Male fetuses are much more susceptible than the female, and stillbirths are much more frequent in males.

This allergy is not, however, specific, either in man or in animals. Allergic persons, when brought in contact with various antigens, give almost parallel reactions. There is, therefore, a polyvalent allergy involved. If all this is true, one can make, on the basis of these intracutaneous reactions, useful therapeutic deductions. If a syphilitic person is anallergic, an attempt should be made to sensitize him; and, if another person is already sensitized, one might be able to increase his allergic capacities. Injection of proteins and malarialization appear to act in this manner. Thus one can see how important is the terrain in the evolution of syphilis, and, again, the enormous service that may be rendered by treatment directed toward modification of the terrain.

SYPHILIS IN THE CONGO REGION

Drs. Van Den Branden and Dubois presented a paper on "Syphilis in the Congo Region and Its Influence on Tropical Pathology." They called attention to the frequency of syphilis in the Belgian Congo and cited statistics showing that the same is true in many other colonies (Madagascar, French Africa). They described the evolution of syphilis in the natives, the frequency of florid secondary syphilis and of tertiary syphilis resembling closely the tertiary stage of yaws. A few cases of dementia paralytica and of tabes appear to be demonstrated. Opinions are contradictory with regard to the relation between syphilis and trypanosomiasis. In twenty-six cases in which syphilis and trypanosomiasis were diagnosed with certainty, the authors found the same proportion of good results and therapeutic failures as in the group of trypanosomiasis patients that were not syphilitic. They have reached the tentative conclusion that syphilis does not aggravate trypanosomiasis, but they nevertheless consider it advisable in such cases to administer a combined form of treatment. With regard to the relation of syphilis and malaria, they stated that, while arsphenamines may have a curative effect in malaria due to Plasmodium vivax, it appears on the contrary that they may act as a stimulant on Plasmodium falciparum. The arsenical treatment of syphilis may therefore be indicated in malaria. Malaria contracted after syphilis would not prevent, by any means, the evolution of neurosyphilis. Syphilis in the Congo region is developing toward neurotropism in spite of the endemic incidence of malaria. Nothing definite is known with regard to the relation of syphilis and recurrent fever.

With reference to the relation between syphilis and yaws, it was stated that in regions in which yaws is widely prevalent syphilis does not progress.

The authors affirmed the independence of syphilis and tropical ulcer, although certain atypical ulcers may possibly develop from syphilis or yaws. The argument based on the action of arsphenamines on tropical ulcer has no value, since the fusospirillary organisms encountered in tropical ulcer are highly sensitive to arsenic.

In spite of the large number of persons in the Belgian Congo found with tattoo markings, the authors did not recall a single case of syphilitic lesions or lesions of yaws developing on keloid cicatrices.

PROPHYLAXIS OF CONGENITAL SYPHILIS

Dr. Alexandre Couvelaire of Paris pointed out that the prophylaxis of congenital syphilis dates back many years. Mauriceau, Ambroise Paré and others studied the subject. Their field of action was, however, limited, whereas today prophylaxis might affect the masses, if one so desired. At the Clinique Beaudelocque, the application of prophylactic treatment reduced the fetal mortality, in cases of syphilis acquired during gestation, from 75 per cent to 15 per cent. In cases of syphilis recently acquired at the time of conception, a reduction from 70 per cent to 5.15 per cent was observed, and in cases of syphilis of long standing, although of congenital origin, a decline of from 20 per cent to 7 per cent was noted.

The results of prophylactic endeavors depend on the interest that the public authorities take in the detection centers, the importance of which cannot be too forcibly impressed on the medical profession, notably in connection with prenatal consultations and obstetric services.

THE MODE OF ACTION OF MEDICINES

Dr. A. Dustin, in his paper on "Anatomopathologic Sidelights on the Mode of Action of Chemotherapeutic Products," said that the ideas concerning the mode of action of medicines have changed during recent years. Ehrlich thought that they had a direct sterilizing action on the infective agent; but an objection to his theory was the marked dilution in the organism of the compound introduced, and its rapid elimination. Levaditi and his co-workers, following researches on the action of atoxyl on trypanosomes, think that there is produced a combination of the drug and a protein belonging to the organism itself—a toxiprotein—acting thus directly on the infective agent and also through the defense forces of the organism.

Aschoff introduced into these conceptions of the action of medicines the idea of the reticulo-endothelial system being endowed with peculiar fixation properties toward stains, chemical substances and various particles. The reactions of the lymphoid organs are characterized by the rapidity of their appearance and may be divided into three forms: mitoses, pyknoses and cellular digestion in the macrophages after phagocytosis of the latter, with liberation of their products of disintegration.

These observations serve to explain the part played by the thymus in immunity in relation to the extreme sensitiveness of the thymocytes, the period of latency in the action of chemotherapeutic products necessitated by the ensemble of tissue changes that they cause, the fact that various substances are capable of acting on the same micro-organism, and the important part taken by the injected organism in the mechanism of the action of various therapeutic substances.

SYPHILIS AND TRAUMA

Dr. Raoul Bernard of Brussels presented a paper on "Syphilis in Relation to Trauma." The author considered to what extent syphilis may modify the consequences of a trauma and to what extent the traumatism may influence the evolution and the manifestations of syphilis. There are indisputable cases in which a chancre became grafted on a wound or a case of syphilis inoculated directly through a traumatism. These are exceptional. Cases have been seen in which syphilitic symptoms developed at a spot that had been traumatized. With regard to ocular, visceral and nervous forms of syphilis, traumatic manifestations of the disease are rare and even questionable. Nevertheless, a traumatism may have been the precipitating cause. Trauma may reveal the presence of congenital syphilis, which may retard the consolidation of a fracture. A diagnosis of traumatic syphilis must be reached on careful clinical examination, as well as on serologic tests. A test treatment will furnish valuable information. The pathogenesis of such accidents is obscure. One invokes usually mechanical factors such as a circulatory disturbance resulting from traumatism. No doubt the state of sensitization or immunization plays an important part. To prevent the appearance of syphilitic accidents in a traumatized person having a history of syphilis, it is necessary to institute energetic treatment extending over a long period. Thus will be prevented what the author calls "the avoidable complications" due to lack of care.

Marriages

ARTHUR S. JONES, Huntington, W. Va., to Miss Fanny Harrison Mills of Russellville, Ky., in Louisville, Ky., October 11.

WILLIAM AUGUSTUS ANTHONY, Gastonia, N. C., to Miss Katherine Josephine Williams of Rock Hill, S. C., July 15.

YATES SHUFORD PALMER, Valdese, N. C., to Miss Lillian Alten Wrigglesworth of Richmond, Va., September 2.

LEWIS HOWARD CARPENTER, Winslow, Wash., to Miss Ruth Allen of Port Blakely in Vancouver, B. C., July 7.

DAVID MITCHELL KEATING, Cleveland Heights, Ohio, to Miss Louise Carew of Youngstown, June 28.

AUSTIN LEWIS KIMBLE, Manoa, Pa., to Miss Eunice May Rousher of Ocean City, N. J., September 7.

NORMAN A. POKORNY, Boston, to Miss Ethel Gladys Kortlucke of Richmond Hill, N. Y., July 27.

FRANCIS XAVIER TAMISIEA, Missouri Valley, Iowa, to Miss Frances Stessman of Panama, June 5.

JOHN LESH JACOBS, New York, to Miss Marjorie Franks Evatt of Brookline, Mass., June 15.

HUGH C. NICKSON, Independence, Mo., to Miss Carolyn Woodward Berridge, recently.

WILLIAM H. S. SPEISSEGGER, Charleston, S. C., to Miss Laura Agnes Saville, July 18.

WADE THOMAS PARKER, Fayetteville, N. C., to Miss Margaret Frances Blue, in July.

LELAND L. BULL, Seattle, to Miss Alice Horstman of Port Angeles, Wash., July 14.

KENNETH REW to Miss Catherine McNary, both of Pendleton, Ore., August 4.

CARLYLE ROBERTS PEARSON, Madison, Wis., to Miss Edith Hope Smith, July 8.

Deaths

Joseph Armin Stackhouse, Erie, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1911; member of the Medical Society of the State of Pennsylvania; past president and secretary of the Erie County Medical Society; served during the World War; attending physician to the Pennsylvania Soldiers' and Sailors' Home Hospital; aged 43; died, September 4, at his home in Girard.

Samuel Franklin Adams ● White Plains, N. Y.; New York Homeopathic Medical College and Flower Hospital, New York, 1920; assistant professor of medicine at his alma mater; member of the American College of Physicians; on the staffs of the Flower Hospital and the Metropolitan Hospital, New York, and St. Agnes' and White Plains hospitals; aged 37; died, September 28, of pneumonia.

Claude Allen Thompson ● Muskogee, Okla.; Kansas City (Mo.) Medical College, 1900; member of the House of Delegates of the American Medical Association in 1911 and in 1922; for many years secretary of the Oklahoma State Medical Association; editor of the *Journal of the Oklahoma State Medical Association;* aged 58; died, October 2, of a self-inflicted bullet wound.

John Wix Thomas ● Phoenix, Ariz.; Chicago Homeopathic Medical College, 1891; past president of the Maricopa County Medical Society; formerly secretary of the state board of medical examiners; on the staff of the Good Samaritan Hospital; aged 76; died, August 30, in the Good Samaritan Hospital, Los Angeles, of lobar pneumonia.

Frank F. Greene, Olathe, Kan.; University of Buffalo (N. Y.) School of Medicine, 1879; member of the Kansas Medical Society; past president and secretary of the Johnson County Medical Society; formerly health officer of Olathe; aged 81; died, September 14, in the Bell Memorial Hospital, Kansas City, Mo., of bronchopneumonia.

Oscar Ofner, Chicago; Hungarian Royal Pázmány Petrus University of Sciences, Medical Faculty, Budapest, Hungary, 1898; member of the Illinois State Medical Society; fellow of the American College of Surgeons; on the staffs of St. Elizabeth's, St. Joseph's and Alexian Brothers' hospitals; aged 59; died, October 2, of heart disease.

Joseph Calvert Suter, Grafton, N. D.; Trinity Medical College, Toronto, Ont., Canada, 1891; past president of the North Dakota Board of Medical Examiners; fellow of the American College of Surgeons; on the staff of the Grafton Deaconess Hospital; aged 68; died, September 3, of cerebral hemorrhage.

Edgar William Allin, Edmonton, Alta., Canada; Trinity Medical College, Toronto, Ont., 1902; L.R.C.P., London, and M.R.C.S., England, 1903; past president of the Alberta Medical Association; fellow of the American College of Surgeons; on the staff of the Royal Alexandra Hospital; aged 58; died, July 15.

Davis Baker ● Glens Falls, N. Y.; Cornell University Medical College, New York, 1909; president of the Warren County Medical Society; fellow of the American College of Surgeons; surgeon to the Glens Falls Hospital, and the Emma Laing Stevens Hospital, Granville; aged 48; died, September 28.

Alfred E. Diehl, Buffalo; University of Pennsylvania School of Medicine, Philadelphia, 1892; member of the Medical Society of the State of New York; formerly associate professor of dermatology, University of Buffalo School of Medicine; aged 64; died, September 20, of coronary thrombosis.

Marvin Warren Reed, Denver; Jefferson Medical College of Philadelphia, 1903; member of the Colorado State Medical Society; served during the World War; on the staffs of St. Joseph's, St. Anthony's and St. Luke's hospitals; aged 54; was found dead, September 2, of pulmonary hemorrhage.

John Thomas Tucker, Waverly, N. Y.; Long Island College Hospital, Brooklyn, 1885; formerly village president and member and president of the board of education; on the staffs of the Tioga General Hospital, Waverly, and the Robert Packer Hospital, Sayre, Pa.; aged 73; died, August 20.

Frank Edward Abbett, Indianapolis; Medical College of Indiana, Indianapolis, 1905; member of the Indiana State Medical Association; on the staffs of the Indianapolis City Hospital and the Methodist Episcopal Hospital; aged 52; died, September 17, in a local hospital, of coronary embolus.

Frederick Ellsworth Clark, Burlington, Vt.; University of Vermont College of Medicine, Burlington, 1894; formerly associate professor of pathology at his alma mater; served

during the World War; aged 64; died suddenly, September 11, of hemiplegia and coronary thrombosis.

Thomas F. Willson, Arcola, Miss.; University College of Medicine, Richmond, Va., 1899; member of the Mississippi State Medical Association; aged 54; died, September 23, in the King's Daughters' Hospital, Greenville, of hemorrhage due to duodenal ulcer and bronchopneumonia.

Harry Leslie Stilphen, Richmond, Maine; University of Vermont College of Medicine, Burlington, 1913; member of the Maine Medical Association; president of the Sagadahoc County Medical Society; aged 50; died, September 9, in the Maine General Hospital, Portland.

Benjamin Franklin Iden, Manassas, Va.; Washington University School of Medicine, Baltimore, 1872; member of the Medical Society of Virginia; aged 89; died, September 22, in the Providence Hospital, Washington, D. C., of an injury received when kicked by a horse.

De Alton Burr Potter, Salisbury, Md.; University of Maryland School of Medicine, Baltimore, 1904; member of the Medical and Chirurgical Faculty of Maryland; aged 54; on the staff of the Peninsula General Hospital, where he died, September 12, of heart disease.

William Purkis Watson, Pawtucket, R. I.; Bellevue Hospital Medical College, New York, 1879; member of the Rhode Island Medical Society; for many years on the staff of the Memorial Hospital; aged 81; died, September 12, in Saco, Maine, of heart disease.

Pierre Gerold Fermier ● Leesburg, Ind.; Medical College of Indiana, Indianapolis, 1894; county health officer; served during the World War; aged 47; died, September 19, in the McDonald Hospital, Warsaw, of injuries received when struck by an automobile.

Thomas Joseph Francis Murphy, St. Jean D'Iberville, Que., Canada; Bellevue Hospital Medical College, New York, 1888; formerly professor of clinical surgery, Dalhousie University Faculty of Medicine, Halifax, N. S.; aged 68; died, July 6, in Montreal.

Joseph Elmer Schaefer, Cogan Station, Pa.; College of Physicians and Surgeons, Baltimore, 1896; member of the Medical Society of the State of Pennsylvania; aged 65; died, September 17, in the Williamsport (Pa.) Hospital, of myelogenous leukemia.

Charles Wise Byrd, New York; University College of Medicine, Richmond, Va., 1909; member of the Medical Society of the State of New York; on the staff of the Manhattan Eye, Ear and Throat Hospital; aged 47; died, September 14, of heart disease.

Marcus T. Hickman, Hudson, N. C.; University College of Medicine, Richmond, Va., 1909; member of the Medical Society of the State of North Carolina; aged 51; died, September 18, in the Caldwell Hospital, Lenoir, of a ruptured appendix.

Charles C. Peck, Harvard, Ill.; Hahnemann Medical College and Hospital, Chicago, 1895; member of the Illinois State Medical Society; formerly county coroner; at one time proprietor of a hospital bearing his name; aged 62; died, September 17.

Robert S. Maison, Chester, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1890; member of the Medical Society of the State of Pennsylvania; aged 66; died, August 31, in Manasquan, N. J., of chronic myocarditis and nephritis.

Joseph Charles Edward Daunais, Ste. Anne des Plaines, Que., Canada; School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal, 1891; aged 66; died, May 1, of hepatic and renal insufficiency.

Ray Morrison Means, Shively, Ky.; University of Louisville School of Medicine, 1904; served during the World War; aged 51; on the staff of the SS. Mary and Elizabeth Hospital, where he died, September 18, of myelogenous leukemia.

Charles Sumner Knight, Falmouth Heights, Mass.; University of Michigan Medical School, Ann Arbor, 1878; member of the Massachusetts Medical Society; aged 77; died, September 21, at Westboro, of cerebral hemorrhage.

Frank L. Kinsey, Fremont, Ohio; Medical College of Ohio, Cincinnati, 1882; member of the Ohio State Medical Association; aged 72; died, September 8, in the Memorial Hospital, following an operation for appendicitis.

Isaac Bowden ● Port Huron, Mich.; Detroit College of Medicine, 1894; served during the World War; aged 58; on the staff of the Port Huron Hospital, where he died, September 19, of carcinoma of the prostate.

John Roberts Green, Nashville, Tenn.; University of Tennessee Medical Department, 1904; member of the Tennessee State Medical Association; aged 60; died, September 3, in a local hospital, of strangulated hernia.

Claude Raymond Matthis, Amity, Ore.; Memphis (Tenn.) Hospital Medical College, 1894, past president of the Oregon Board of Medical Examiners; aged 64; died, August 2, following an operation for mastoiditis.

Addison Kendall ● Great Bend, Kan.; Hering Medical College, Chicago, 1901; formerly member of the state board of medical registration and examination and state board of health; aged 68; died, August 29.

Charles Martelle Coker, Eden, Miss.; Memphis (Tenn.) Hospital Medical College, 1896; aged 65; died, September 20, in a hospital at Vicksburg, of pernicious anemia, hypertrophy of the prostate and phlebitis.

Robert Lee Marchant, Greer, S. C.; Kentucky School of Medicine, Louisville, 1889; member of the South Carolina Medical Association; aged 67; died, September 8, of acute dilatation of the heart.

John Stephen Malone, Poughkeepsie, N. Y.; Syracuse University College of Medicine, 1919; formerly on the staff of the Vassar Brothers Hospital; aged 38; died, September 22, of heart disease.

Thornton Kirkland Perry, Albany, N. Y.; Albany Medical College, 1875; aged 81; died, September 5, in the Hudson River State Hospital, Poughkeepsie, of arteriosclerosis and chronic myocarditis.

Isaac Barber, Phillipsburg, N. J.; University of Pennsylvania School of Medicine, Philadelphia, 1879; formerly city physician and health officer; aged 79; died, September 30, of arterial hypertension.

Chalmer Roswell Hecox, Golden, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1897; member of the Illinois State Medical Society; aged 58; died suddenly, September 8, of heart disease.

Harry Nathaniel Mayo, Los Angeles; Baltimore Medical College, 1895; fellow of the American College of Surgeons; served during the World War; aged 65; died, September 7, of arteriosclerosis.

William E. Holmes, Brownsville, Ohio; Medical College of Ohio, Cincinnati, 1884; aged 77; died, September 10, in the City Hospital, Newark, of paralysis agitans and hypertrophy of the prostate.

T. W. Williams, Litchfield, Ill.; American Medical College, St. Louis, 1879; aged 78; died suddenly, August 31, in St. Luke's Hospital, Davenport, Iowa, of hemorrhage due to duodenal ulcer.

Tina Gardiner Head Patrick, Vancouver, B. C., Canada; Trinity Medical College, Toronto, Ont., 1896; aged 71; died, May 17, in the General Hospital, of a fractured hip received in a fall.

John Marius Challen Cook, Weston, Ohio; Long Island College Hospital, Brooklyn, 1887; for many years member of the board of education; aged 74; died, September 10, of heart disease.

Ava Hamlin Fenn, Meriden, Conn.; College of Physicians and Surgeons, Baltimore, 1886; member of the Connecticut State Medical Society; aged 86; died, September 15, of heart disease.

Owen Riley Marshall, Moody, Texas; Vanderbilt University School of Medicine, Nashville, Tenn., 1899; served during the World War; aged 61; died, September 9, of heart disease.

Robert Edwin Wilson, Davidson, Okla.; Southwestern University Medical College, Dallas, Texas, 1904; aged 62; died, July 24, in Wichita Falls, Texas, of pneumonia.

Laurence Baily Powell, Moorestown, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1931; aged 26; died, September 18, of a self inflicted bullet wound.

James Drew Ingram, McBee, S. C.; Atlanta College of Physicians and Surgeons, 1902; aged 55; died, September 15, in the McLeod Infirmary, Florence, of pneumonia.

Albert Edwards Wilson ● Norfolk, Va.; University of Maryland School of Medicine, Baltimore, 1896; aged 65; died, in September, of benign prostatic hypertrophy.

Seth Harold Jones, Holt, Mich.; University of Michigan Homeopathic Medical School, Ann Arbor, 1906; aged 53; died, September 5, of abdominal metastatic sarcoma.

Anderson P. Jones ● Pennsboro, W. Va. (licensed, West Virginia, by years of practice); county health officer; aged 80; died, September 9, of coronary embolism.

Joseph Odilon Drouin, Grande Baie, Que., Canada; Laval University Faculty of Medicine, Quebec, 1900; aged 57; died suddenly, July 29, of cerebral hemorrhage.

Francis H. Geer, Claremont, Calif.; Medical College of Ohio, Cincinnati, 1877; aged 84; died, July 20, in Pomona, of arteriosclerosis and cerebral hemorrhage.

Michael Arthur Mellenthin, Los Angeles; Medical Department of Hamline University, Minneapolis, 1906; aged 50; died, September 24, of heart disease.

David C. McKenzie, Granville, N. Y.; University of Maryland School of Medicine, Baltimore, 1891; aged 67; died, September 17, of pulmonary tuberculosis.

Joseph Ditman Lawrence, Sprigg, W. Va.; Hahnemann Medical College and Hospital of Philadelphia, 1893; aged 62; died, August 25, of angina pectoris.

Walter Denison Leach, Detroit Lakes, Minn.; College of Physicians and Surgeons of Chicago, 1895; aged 76; died suddenly, September 4, of heart disease.

Edward Joseph Donlin, New York; University of the City of New York Medical Department, 1876; aged 81; died, September 23, of bronchopneumonia.

Louis E. Eddy, Port Clinton, Ohio; Louisville (Ky.) Medical College, 1893; aged 72; died, September 28, in the Pool Hospital, of cardiac asthma.

Eugene Derome dit Descarreau, St. Augustin de Quebec, Que., Canada; Laval University Faculty of Medicine, Quebec, 1901; aged 58; died, August 8.

Lurana Abbie Chubbuck, New Bedford, Mass.; Boston University School of Medicine, 1894; aged 76; died, September 1, of coronary thrombosis.

William C. Lewis, Jersey City, N. J.; University of Pennsylvania School of Medicine, Philadelphia, 1880; aged 75; died, September 12, of cholelithiasis.

James Lee Bell, Malone, Fla.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1909; aged 52; died, September 8, of cerebral hemorrhage.

Paul Trudel, Ste. Genevieve De Batiscan, Que., Canada; School of Medicine and Surgery of Montreal, 1896; aged 59; died, June 19, of carcinoma.

Andrew Johnson Isham, Maryville, Tenn.; University of the South Medical Department, Sewanee, 1900; aged 70; died, September 1, of pneumonia.

Ira E. C. W. Smith, Palmetto, Ga.; Atlanta College of Physicians and Surgeons, 1905; aged 50; died, September 4, in Newnan, of pneumonia.

Clarence Niles Payne, Fairfield, Conn.; New York Homeopathic Medical College, 1885; aged 71; died, September 8, of carcinoma of the stomach.

Haude T. Dacus, Williamston, S. C.; Baltimore Medical College, 1902; aged 54; died, September 13, in the Greenville (S. C.) City Hospital.

William Bay Stoker, Ottumwa, Iowa; College of Physicians and Surgeons, Keokuk, 1896; aged 65; died, September 6, of pernicious anemia.

Vincent Z. Keeler ✠ Harleysville, Pa.; Jefferson Medical College of Philadelphia, 1880; aged 75; died, September 11, of heart disease.

Fred McCandless, Ludington, Mich.; Chicago Homeopathic Medical College, 1894; aged 64; died, September 11, of locomotor ataxia.

Reuben Hugh Hannah ✠ Prague, Okla.; Gate City Medical College, Dallas, Texas, 1906; aged 75; died, July 17, of heart disease.

Peter L. Coble, Celestine, Ind. (licensed, Indiana, 1897); formerly state senator; aged 80; died, September 14, of heart disease.

Peter Goosen, Enid, Okla.; American Medical College, St. Louis, 1891; aged 78; died, August 30, of cerebral hemorrhage.

Henry C. Iseman, Beaver Falls, Pa. (licensed, Pennsylvania, 1885); aged 101; died, September 5, in Ithaca, Mich.

George Cameron McGibbon, Honeywood, Ont., Canada; Trinity Medical College, Toronto, 1899; aged 62; died, July 28.

Joseph Addison Sweeny, Louisville, Ky.; Hospital College of Medicine, Louisville, 1902; aged 59; died, July 17.

Earl Kinion Wheelis, Blanton, Ala.; Atlanta College of Physicians and Surgeons, 1911; aged 44; died, July 13.

R. Carson Stone, Russellville, Tenn. (licensed, Tennessee, 1889); aged 72; died, September 12, at Clinton.

Correspondence

PSEUDO-AGGLUTINATION IN BLOOD

To the Editor:—In THE JOURNAL, August 19, page 627, a correspondent writes concerning the difficulties he is encountering when determining the blood groups of pregnant and anemic patients. In your reply you point out that the blood group of an individual remains constant throughout life and is unaffected by disease or pregnancy. However, there are other phenomena that have been mistaken for true iso-agglutination, and one of these (rouleau formation) is particularly pronounced in pregnant women.

Rouleau formation is a phenomenon occurring in normal individuals (but only to a mild degree), which is characterized by a piling up of the blood cells, resembling piles of coins. In conditions associated with a rapid sedimentation time, this phenomenon is much more marked. In pregnancy and severe anemias, rouleau formation may be so pronounced that the clumps become large and irregular, resembling superficially the clumping caused by true iso-agglutination. Such pronounced rouleau formation is therefore known as "pseudo-agglutination." Pseudo-agglutination can most readily be recognized by examination of the specimen under the high power of the microscope and by the fact that the clumps disappear on slight dilution. (Other criteria for differentiating true iso-agglutination and pseudo-agglutination are given by Landsteiner in Jordan and Falk's Newer Knowledge of Bacteriology and Immunology, 1928, p. 899, and by A. F. Coca, Note Concerning Differences Between the Clumping of Pseudo-Agglutination and Iso-Agglutination, *J. Immunol.* **20**:263 [April] 1931.) The simplest way to prevent pseudo-agglutination is by making the tests with dilute suspensions of the patient's blood (from 1 to 5 per cent). The reason for this is that the active principle responsible for pseudo-agglutination is present in the serum. The most certain way of preventing pseudo-agglutination is by using washed cells, thus entirely removing the troublesome serum.

ALEXANDER S. WIENER, M.D., Brooklyn.

CONTROL OF TYPHOID CARRIERS

To the Editor:—As a former health officer I read with great interest the paper by Bigelow and Anderson on the cure of typhoid carriers, in THE JOURNAL, July 29. My interest was aroused at the remark "our inability to make certain that the stool specimen submitted actually came from the carrier," as nearly thirty years ago, in a case in which I rightly suspected that I was deceived as to the origin of the stool specimens, I employed a method of control, without hospitalizing the suspected carrier, that might be of use also in American health offices.

Before recommending it I may tell a curious event, which illustrates the necessity of always being suspicious. A farmer's wife living in a hamlet in Westphalia was under observation as a typhoid carrier. The specimens of her stool varied from positive to negative. Once when she was told that the last specimen had been found positive she came to the office of the medical officer protesting: "You can see that the examinations of your laboratory are not reliable. The last specimen that I handed to the health surveyor was not stool of mine but of my friend Mrs. Z." Notwithstanding the fact that this woman resided in another hamlet beyond the border of the county, it was managed to procedure an authentic stool specimen from her, with the result that one more typhoid carrier was listed.

The procedure adopted by me is the following: The nurse or desinfector collecting the specimens makes the suspected carrier swallow in his presence a capsule or wafer of an equal

mixture of lycopodium, powdered animal charcoal and sodium sulphate or another mild laxative and instructs him to collect the stool of the next morning. In the laboratory, besides the cultivation of bacteria, the lycopodium spores are looked for with the microscope in the black parts of the stool in the same manner as eggs of helminths. I was led to adopt the procedure by the remark in a textbook that, in seeking the eggs of helminths, one must not be deceived by finding the curious and characteristic spores of lycopodium, as it is customary to powder pills with lycopodium.

I do not offer this procedure as a substitute for the method of Bigelow and Anderson, who recommend bile cultures by the duodenal tube before and after an operation on a carrier; but in the first year, before a carrier is finally listed, and in the control of carriers and suspected persons who decline to be hospitalized, it should be of value in ascertaining the true origin of the specimens.

WERNER ROSENTHAL, M.D., Magdeburg, Germany.

USE OF SODIUM AMYTAL IN STRYCHNINE POISONING

To the Editor:—In a recent edition of THE JOURNAL I read with interest an article regarding the intravenous use of sodium amytal in the treatment of strychnine poisoning. In the past week I have had the opportunity to put this new treatment into practice with favorable results. I was called to see a man, aged 33, who had taken what I estimated to be 15 grains (1 Gm.) of strychnine sulphate crystals about two hours before my arrival. I base my estimate as to the amount on the fact that the bottle containing the remaining strychnine was one-half empty, the full bottle having contained one-sixteenth ounce, and according to the man's wife, who was present, he had consumed this amount. The patient when first seen was lying quiet but in a few seconds a typical strychnine spasm manifested itself. The position was that of opisthotonos, the spasm lasting for about one and one-half minutes. The typical sensation of approaching death (as described by Beckman) was present between this and the preceding spasm, and manifested itself in about five minutes. Two glasses of mustard water were administered as an emetic immediately with no resulting emesis. It may be of interest to note that the patient in attempting to bring about emesis by means of gagging himself with his finger was quite severely bitten, owing to the sudden contraction of the muscles acting on the mandible.

The patient was given 6 grains (0.4 Gm.) of sodium amytal orally and taken to the hospital. There the spasms were even more severe and gastric lavage was instituted. Owing to the severe contractions of the mandible, a nasal tube was used in the lavage, the oral route not being practical.

After the lavage, 1½ ounces (45 Gm.) of magnesium sulphate was instilled into the stomach. Following the lavage and instillation, 5 grains (0.3 Gm.) of sodium amytal was given intravenously, with resulting emesis followed by a deep sleep and complete relaxation. The patient was put to bed and slept soundly for about half an hour, awakening at this time in a state of restlessness and moderate excitement, no doubt a manifestation of the sodium amytal. No more spasms were noted, but the restlessness continued and about two hours following the administration of the sodium amytal 30 grains (2 Gm.) of chloral hydrate was given by means of a retention enema. The patient slept for the remainder of the day and was not disturbed aside from the administration of a soap suds enema late in the day. The following day he was much stronger but was kept quiet by the use of sodium amytal orally, approximately 12 grains (0.8 Gm.) being required. On the third hospital day the sodium amytal was discontinued and the patient allowed to rouse. There was some excitement and restlessness, but he ate well and showed no residual symptoms of the poisoning aside from a retention of urine, this no doubt resulting from contraction of the vesical sphincter. The patient was catheterized at two intervals and the following day was able to void. Further recovery from the strychnine poisoning was uneventful.

BRYAN C. FENTON, M.D., Lincoln, Neb.

A DEATH FROM ALPHA-DINITROPHENOL POISONING

To the Editor:—At 6:25 p. m., August 27, H. G. was admitted to the Central Emergency Hospital with the complaint that he had taken 5 grains (0.3 Gm.) of alpha-dinitrophenol that morning at 11:50. The patient stated that he was an M.D., a graduate of Vienna, and that he had taken a dose one week before (August 20) without untoward results.

The patient informed Dr. Charles Bennenger, the assistant surgeon, that he had obtained the drug from a physician at a local hospital in order to attempt a reduction in his weight.

Soon after taking the drug at 11:50 a. m., the patient stated that he went for a walk and returned to his rooms soon afterward. About 4 p. m. he began to notice a feeling of apprehension; other than palpitation, he had no definite complaint. He became more restless and uneasy, and finally, about 6 o'clock, requested his hotel to telephone for an ambulance.

On admission he appeared pale, agitated and markedly apprehensive. Physical examination was negative. He was placed in bed, where he complained of being warm and persisted in throwing off the covers. He requested that more windows be opened or that he be taken on the roof for more air. He also complained of severe pain and stated that there was considerable air hunger, without actual dyspnea. Restlessness and apprehension increased, and there was a progressive rise of temperature, with frequency pulse rate and respiration. There was profuse perspiration; the temperature rose to 105.4 F. The pulse on admission had been 84 and increased until 9:30, when it registered 146 beats per minute. The patient lapsed into delirium and coma at 9:45 and died at 10 o'clock. The rectal temperature was taken at this time, and the mercury column registered at the top of the thermometer (110 plus). Within twenty minutes his body was in boardlike heat rigor. The amount of the drug taken was estimated post mortem by an expert at 2.5 to 5 Gm., which is fifteen times the ordinary dosage.

J. C. GEIGER, M.D., San Francisco.

A LARGE GALLSTONE

To the Editor:—I removed a gallstone from a woman yesterday which I think is the largest individual gallstone in the country. If there is a larger one please let me know. The stone weight and measurements are: weight 2½ ounces (70 Gm.); length, 3 inches (7.5 cm.); diameter, 1½ inches (4 cm.); circumference, 4½ inches (11.5 cm.). It was greenish gray and firm and was the only stone in the bladder. The size of the gallbladder was 8½ inches (21.5 cm.); diameter, 2 inches (5 cm.).

FRED G. BUSHOLD, M.D., Lawrence, Mass.

COMMENT.—Sternberg reported in Aschoff's "Pathologic Anatomy," edition 6, a gallstone 14 cm. across and weighing 200 grains, or 13 Gm. Rankin and McKeith reported a gallstone measuring 6.9 by 8.5 cm. Clement found one measuring 2½ by 1¼ inches, or 6.3 by 3.1 cm. Bennett removed one at operation with a circumference of 5½ inches (14 cm.) and weighing 636 grains (41.3 Gm.). A case was reported in THE JOURNAL by A. L. Russell, July 27, 1901, page 265. The gallstone in that case measured 5¾ by 4½ inches (14.5 by 11.4 cm.).

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

CHRONIC NEPHRITIS

To the Editor:—The following case has proved a puzzle to me as to both classification and etiology: A white woman, aged 20, single, American, first requested advice because of puffiness of the hands and feet, scanty urination, a weight gain of 36 pounds (16 Kg.) in two months, drowsiness and inability to concentrate on her duties as a bookkeeper. The past history is negative except for a gastro-enterostomy performed two years before for prepyloric ulcer. Convalescence was uneventful and at present the patient is comfortable on a bland diet. Urine examination at the time of operation was negative throughout. The history of the organ systems and the menstrual history are all negative with the exception of a marked constipation dating back to the time of the surgical procedure and for which the patient takes from four to eight compound cathartic pills each night. Physical examination is negative except for pitting edema of the hands, the feet, and the legs to the knees. There is moderate pallor. The blood pressure is 135 systolic, 90 diastolic. The weight is 149 pounds (67.6 Kg.). Hemoglobin is 40 per cent. The red blood cells number 4,500,000. Examination of the urine reveals specific gravity, 1.030; albumin, negative; sugar, negative; white blood cells, negative; red blood cells, negative; hyaline casts, +++; granular casts, +; benedine test, negative. The patient refused a blood chemistry examination. On repeated examinations of the urine, no trace of albumin has ever been found by any of the standard tests. Casts are constantly present. The edema has been readily controlled by the use of ammonium chloride, and a profuse diuresis has followed the use of salyrgan. The weight has been maintained at from 130 to 135 pounds (59 to 61 Kg.) and the anemia has improved with copper and iron. All of the orginal complaints and signs reappear as soon as the patient is taken off the diuretics. Specifically, what type of nephritis am I dealing with in the absence of albumin and the presence of hyaline and granular casts? Could the constant dosage with compound cathartic pills be an etiologic factor? What is the prognosis? What treatment is indicated? My available literature has furnished no light on these difficulties. Please omit name.

M.D., Ohio.

ANSWER.—Accepting the statement that there is no disturbance in the heart or the liver to account for the edema, the case is apparently one of chronic nephritis; but the laboratory data, as given, are not sufficient for a complete diagnosis. The edema seems too extensive to be of nutritional origin. The exhaustion, oliguria, edema, moderate elevation of blood pressure (the normal pressure for a woman of 20 is about 110 to 120 systolic, about 80 diastolic) and cylindruria suggest chronic glomerular or diffuse nephritis. However, in chronic glomerular nephritis one would expect to see a definite reduction in erythrocytes as well as hemoglobin, and one would not ordinarily expect to find a urinary specific gravity of 1.030. Cases of chronic glomerular nephritis without albuminuria have been recorded but are certainly the exception; patients with chronic glomerular nephritis generally demonstrate on repeated examinations at least slight albuminuria. Albuminuria is expected even more in chronic nephrosis or tubular nephritis. In the absence of erythrocytes, pus cells or a history of renal colic, tuberculous or calculous renal disease or pyelonephritis seems unlikely. When polycystic kidneys are present, at least one kidney is generally found to be enlarged. In the various toxic nephroses, albuminuria with or without edema is present. A generalized edema occurring only at the menstrual period, associated with headaches, choked disks and anuria, and in one case completely relieved by injection of the active hormone of the anterior pituitary gland, has recently been described (Thomas, W. A.: Generalized Edema Occurring Only at Menstrual Period, abstr. THE JOURNAL, January 7, p. 68).

The discrepancy between the low value for hemoglobin and the relatively normal erythrocyte count needs further investigation, and a chemical analysis of blood, preferably its urea content, should be insisted on for adequate diagnosis and treatment. If this is refused, the excretion of phenolsulphonphthalein should be studied. A clinically accurate approximation of nitrogen concentration can be obtained by the determination of the salivary urea index (Hench, P. S., and Aldrich, Martha: A Salivary Index to Renal Function, THE JOURNAL, Dec. 15, 1923, p. 1997). The water and concentration tests also should be done.

If evidence of retention of nitrogen is found, a diet containing about 50 Gm. of protein should be given, no extra salt being allowed. If the nitrogen retention is marked, intake of fluid should not be restricted below 1,000 cc. in spite of the edema. The use of ammonium chloride might decrease the alkali reserve and ammonium chloride or ammonium nitrate might increase the retention of nitrogen. Administration of potassium nitrate (from 6 to 8 Gm. daily) would be preferable and might control the edema without the use of salyrgan, which should be used cautiously if at all when retention of nitrogen or hematuria is present. The patient's physical activities should be minimal, rest in bed probably being desirable to minimize the catabolism of nitrogen. Exposure to cold and fatigue should be avoided. Removal of foci of infection may be important. If there is no retention of nitrogen, restriction of protein is not required, indeed, may be contraindicated, but restriction of salt and water are indicated.

No definite statement regarding prognosis can be made until the patient has been observed from six to twelve months. If then there is no evidence of progressive renal insufficiency, increase in hypertension, alteration in cardiac size and function, or changes in the ocular fundi, the diagnosis of quiescent renal lesion may be justified and a good prognosis given.

It is not likely that the use of compound cathartic tablets is responsible for the condition. These tablets are generally supposed to contain extract of colocynth, calomel, resin of jalap and gamboge powder. However, transient renal irritability, with albuminuria, on rare occasions has been ascribed to phenolphthalein used as a laxative (Effects of Phenolphthalein on Kidney, THE JOURNAL, August 5, p. 469).

LEUKORRHEAL DISCHARGE AFTER COITUS

To the Editor:—A married woman, aged 22, who has been menstruating regularly, complains of a leukorrhea lasting from twenty-four to forty-eight hours following coitus, and also each menstruation. There is no leukorrhea then until after the next coitus. The patient has never been pregnant and she has noticed the symptoms since marriage. Vaginal and bimanual examinations reveal no pathologic changes. There is no history of acute gonorrhea in the woman or her husband, but the husband developed an acute prostatitis a few weeks following a severe attack of scarlet fever about one year ago. I should like to know whether the leukorrhea is physiologic or indicates a pathologic condition. Please omit name.

M.D., Pennsylvania.

ANSWER.—A leukorrheal discharge for a few days after the menstrual flow is not uncommon and requires no treatment except when it is due to endocervicitis, trichomonas vaginalis or moniliasis. The leukorrhea that follows intercourse in this case is most likely not pathologic. It may be the result of the technic of coitus employed by the couple. For example, if the coital act is long drawn out before the orgasm is experienced, there is opportunity for marked congestion in the pelvic organs and for a profuse vaginal discharge. This may persist for a day or two after intercourse. Likewise if the woman is aroused sexually and does not have an orgasm because the husband has his orgasm prematurely and discontinues the act, a leukorrheal discharge may follow such an occurrence. If the woman is repeatedly aroused and regularly frustrated in her desire to have an orgasm, a leukorrheal discharge may be permanently present. In such cases, treatment must be directed at the cause. Local treatment will do no good and may result in harm. A moderately warm tap water douche shortly after intercourse may prove helpful. However, if the discharge is not annoying and the husband and wife are satisfied, no treatment need be instituted.

"LOWER ABDOMINAL ANESTHESIA"

To the Editor:—What is the exact technic of Frigyesi's method of lower abdominal anesthesia (*Monatschr. f. Geburtsh. u. Gynäk.* **90**: 1-258 [Jan.] 1932)? I don't trust my translating ability. What is your attitude toward the method? Is there a spinal anesthetic on the market that does not depend for its localization on the position of the patient? Somewhere in my reading I have run across some sort of acacia mixture especially adaptable to beginners in spinal anesthesia. Is there such a product and is it on the market?

ROBERT MONFORT, M.D., Wolverine, Mich.

ANSWER.—The method consists of a paravertebral injection of 30 cc. of 0.5 per cent procaine hydrochloride at the height of the third lumbar vertebra. The patient sits on the edge of the table with a curved back. The third lumbar spinous process is located. A dermal wheal is produced four fingerbreadths to the right and left of the spinous process and a 12 cm. needle is inserted in the horizontal plane but at 45 degrees toward the midline. After the transverse process is reached, the needle slips past the bony resistance and arrives at the lateral surface of the third lumbar vertebra. At this point, after aspiration for blood, an ounce of procaine is deposited on both sides.

The patient is then laid on her back and the abdominal wall is infiltrated, layer by layer. The rectus fascia is injected after the incision through the skin and the subcutaneous fat has been made. After the peritoneum is opened and the intestines are gently packed away, from 3 to 5 cc. of 0.5 per cent procaine is injected into the round ligament and the ovarian or infundibulopelvic ligaments, according to the operation planned. Finally, from 20 to 30 cc. of the anesthetic solution

is deposited between the two layers of the broad ligament into the parametrium. Now the uterus may be grasped and pulled forward. If there is still some sensation of pain on traction, the sacro-uterine ligament may be injected.

The patients are prepared with scopolamine (1/200 grain, or 0.0003 Gm.) and morphine (1/4 grain, or 0.016 Gm.) two hours and one hour before the operation, or a barbituric sedative is administered.

In approximately 10 per cent of the ninety-one laparotomies a short nitrous oxide anesthesia was added. For vaginal hysterectomies the paravertebral anesthesia is supplemented with a parasacral block or parametrium injections on both sides of the uterus.

It can be readily seen from this description that the method requires considerable skill and experience in various forms of local anesthesia. Professor Frigyesi, who has perfected this combined form of anesthesia during the last fifteen years, is the head of a large gynecologic and obstetric service and has a large group of trained assistants. Under such ideal conditions this lower abdominal anesthesia is feasible and successful, although there were partial failures which had to be supplemented with nitrous oxide in 10 per cent of the cases. For the casual surgeon the method is too complicated and cumbersome. Paravertebral anesthesia is not without danger in the hands of men without special training in this method.

In regard to spinal anesthesia, the surgeon should be thoroughly familiar not only with the technic but also with the physiologic effects, the dangers and the limitations of this method. The monograph of Charles H. Evans (New York, Paul B. Hoeber, 1929) is recommended for study. There is no such thing as spinal anesthesia for beginners. Spinal anesthesia is a valuable method if used with discrimination. Dissolving the procaine crystals in the patient's own spinal fluid seems to be the most desirable procedure. The height of the anesthesia can be governed by various dilutions of the anesthetic and by air insufflation.

RELATION OF PARATHYROID GLANDS TO FORMATION OF RENAL STONE

To the Editor:—A patient has passed a number of stones from both kidneys, most of these with the usual symptoms of renal colic, but on three different occasions a urinary retention with a severe pyelitis has supervened that necessitated major surgery. He has been advised to have roentgen therapy to the parathyroid glands with the idea of diminishing the blood calcium. His calcium content varies from 9 to 10.5 mg. 1. Is there a definite relation between the formation of renal calculi and calcium content in the blood? 2. Would roentgen therapy to the parathyroid gland control the blood calcium? 3. Would such therapy prevent further formation of stones? Please omit name.

M.D., Illinois.

ANSWER.—1. We are not aware of any relation of the sort indicated. From the analyses of Kahn and Rosenblum (THE JOURNAL, Dec. 21, 1912, p. 2252) and others it would appear that the majority of renal stones are composed mainly of calcium oxalate or phosphate or a mixture of the two. There is evidence associating formation of bladder calculi composed of calcium phosphate with a deficiency of vitamin A. Whether the association is direct, or some other dietary deficiency is involved, is perhaps not satisfactorily settled. The references are: Osborne and Mendel (THE JOURNAL, July 7, 1917, p. 32); McCarrison (*Brit. M. J.* **1**:717 [April 16] 1927); Fujimaki (*Japan M. World* **6**:29 [Feb.] 1926; abstr. *Chemical Abstracts* **20**:2694 [Aug. 20] 1926, and THE JOURNAL, June 19, 1926, p. 1946); van Leersum (*J. Biol. Chem.* **76**:137 [Jan.] 1928).

Of forty-five cases of parathyroidism analyzed with relationship to renal calculi, heavy calcium deposit in the urine and milky urine were mentioned twice, fine gravel once and bilateral renal calculi were present seven times. Of Donald Hunter's four classic cases of parathyroid tumors, renal calculi were found in three. These figures are, in fact, higher if the symptom is more often sought. In parathyroidism under the influence of an increased output of parathyroid from the irritated little glands, calcium is liberated from the bones in excess. Hypercalcemia follows and this again leads to secondary calcium deposits in the internal organs, ligaments, and so on, especially, it seems, in the kidneys. In this way the foundation for renal calculi in hyperparathyroidism is laid. Old cases of parathyroidism, therefore, are frequently accompanied by stones and secondary pyelitis. A few patients have died even after successful operations for parathyroid tumor from such secondary changes in the kidney. Therefore, this is one of the reasons why early operation is indicated if the diagnosis of parathyroid tumor is made.

2. To be sure, in a given case it has to be established whether the patient with symptoms of nephrolithiasis has other symptoms of parathyroidism, such as changes in the skeleton, high serum calcium, increased calcium output in the urine, and hypotonia. If such symptoms are present, parathyroid origin of the kidney stones may be thought of; otherwise, kidney stones may well arise from other causes, such as focal infections.

3. If the diagnosis of parathyroidism is established as a possible cause of the renal disturbance, parathyroidectomy or roentgen treatment of the parathyroid region may be considered. So far the roentgen therapy of parathyroid tumors and hyperplasias has only exceptionally been mentioned as successful. Parathyroidectomy in a well established case is generally preferred to roentgen therapy. The removal of a parathyroid tumor (adenoma or hyperplasia) might prevent further formation of stones. To be sure, the harm done (secondary infections, hydronephrosis and pyonephrosis) needs special attention besides the treatment directed toward the parathyroids.

COSMETIC TREATMENT OF WRINKLES ON FACE

To the Editor:—I have a female patient, aged 40, whose face is prematurely wrinkled. She has spoken to me regarding a peeling treatment as used in beauty parlors. What are the usual solutions used and what procedure is followed? What can be done with ultraviolet radiation in producing exfoliation in these cases? Kindly omit name.

M.D., New York.

ANSWER.—Wrinkling is caused by loss of elasticity of the skin through degeneration of its fibers. No treatment can cure it or restore to the skin its youthful elasticity and smoothness. Slight inflammation causes swelling and temporarily smooths out the wrinkles, but with its subsidence they return. Such an inflammation, followed by exfoliation, can be caused by ultraviolet radiation, by freezing with carbon dioxide snow or by chemical irritants. Of the latter the simplest is a solution of corrosive mercuric chloride in alcohol, 1 per cent, painted on a small area daily and allowed to dry on. After a few to several days of this treatment the skin becomes red, when the treatment is stopped and exfoliation awaited. Or the peeling paste used for acne may be used:

	Gm. or Cc.
Betanaphthol	10
Precipitated sulphur	40
Soft soap, U. S. P.	25
Petrolatum	25

If this turns dark it does not indicate any loss of activity. It must not be used in cases in which the kidneys are impaired, and during its use the urine must be watched for signs of kidney irritation. Like the preceding, it must be used on small areas only and not given to the patient to apply; but she must come daily to the doctor for the application.

The area should be washed with ether or benzine and the paste should be spread thickly and allowed to remain from twenty to thirty minutes, when it is removed thoroughly. Soon after application a slight burning sensation is felt, but this ceases in a few minutes. After the removal of the paste, the skin is red for a few hours. The treatment should be repeated each day until a tightening sensation or the onset of exfoliation shows that treatment has been sufficient. Five days is usually enough. During treatment no soap or water is to be used on the areas treated, but they may be cleansed by 0.5 per cent salicylic acid in alcohol.

Perhaps the beneficial effect may last as long as the time consumed in treatment. Any such inflammation may result in increase of pigmentation. Overtreatment may be distressing. We strongly advise against the attempt to improve wrinkles in this way.

BLOOD SEDIMENTATION TESTS

To the Editor:—Will you please supply me with data relative to blood sedimentation test as done with a 5 cc. tube, giving technic, interpretation, averages and relative rate; that is, rapid, moderately rapid and extremely rapid. Also the relation to polymorphonuclear count and to filament count. Please omit name.

M.D., Wisconsin.

ANSWER.—The blood sedimentation test referred to is the graphic method of Cutter. A special sedimentation tube of 5 cc. capacity is used, which is graduated in tenths of a centimeter, each 1 mm. in height and marked in millimeters. Tubes answering these specifications may be obtained from the A. H. Thomas Company of Philadelphia. In this method the position of the sedimenting column of red cells is recorded every five minutes for one hour. The test is performed as follows: Five cc. of venous blood is aspirated into a carefully cleaned syringe containing 0.5 cc. of freshly prepared 3 per cent sodium citrate solution. When the blood is drawn, the barrel of the syringe is drawn backward about 1 cm. and the syringe is gently tilted backward and forward several times to insure uniform mixing of the blood and citrate solution. (If clotting occurs, the test must be repeated.) The needle is removed

from the syringe and the contents are poured into the sedimentation tube. The tube is stoppered with a paraffin coated cork and inverted two or three times. The tube is placed in a rack and the position of the column of red blood cells is recorded every five minutes for one hour as it settles down. The observations are recorded on a sedimentation chart on which the horizontal lines represent the divisions of the sedimentation tube and the vertical lines the intervals of time. Printed forms may be be obtained from Charles M. Berkemeyer, Sellerville, Pa. The graph serves as a rough estimation of the presence or absence of pathologic activity. The sedimentation index is the total sedimentation of red blood cells at the end of sixty minutes expressed in millimeters. The normal averages vary for men from 3 to 4 mm. and for women from 5 to 6 mm. During menstruation it may be as high as 12 mm. It is normally increased in the new-born and the aged. The significant changes occur in the first thirty minutes. In the presence of severe acute inflammation the rate may be extremely rapid and reach from 25 to 30 mm. the first thirty minutes, producing what Cutler has termed a vertical curve on the graph.

The mechanism whereby changes occur in the polymorphonuclear and filament count and the sedimentation rate are different. The two examinations supplement each other. The leukocyte count is influenced not only by the disease process but also by the patient's ability to react. A change in the leukocyte count appears before the sedimentation is significantly influenced. The sedimentation rate expresses a condition in the body and not a reaction of the body. For example, in severe infections both tests show marked changes. Weeks later the leukocyte count may fall to normal while the sedimentation index will remain high in spite of an obvious clinical improvement. The sedimentation rate indicates more delicately the complete healing of a diseased tissue than does the study of leukocytes. Because of other factors influencing the sedimentation rate, however, conclusions on this test alone are often misleading.

FEVER OF UNKNOWN ORIGIN IN CHILDHOOD

To the Editor:—A child, now 2½ years old, was first seen when 8½ months old. He was brought because of a constantly elevated temperature, which had been present for about seven weeks. At the onset the child had loose stools and some vomiting. There was a slight cough. Examination revealed little. The child weighed 18 pounds and 8 ounces (8.4 Kg.). The temperature was 100.2. There was some postpharyngeal redness. Blood examination revealed: red blood cells, 5,000,000; hemoglobin, 85 per cent; white blood cells, 9,500; small lymphocytes, 70 per cent; large lymphocytes, 5 per cent; neutrophils, 23 per cent; mononuclears, 1 per cent; eosinophils, 1 per cent. There were no malarial plasmodia. Urine examination was negative except for a slight amount of sugar, which was not present on a subsequent examination. Stool examination was negative. Both a Mantoux and a Pirquet test were negative. The appetite was never more than fair. As the child had not had any cod liver oil but only small amounts of viosterol, I placed him on 10 D cod liver oil and informed the mother that if the fever continued I wanted to have an agglutination test for Alcaligenes melitensis. The temperature did drop somewhat: instead of running between 100 and 101, as it had been doing, it ran between 99 and 100. The child had frequent attacks of an infection of the upper respiratory tract and I pleaded with the mother and father to have a tonsillectomy and adenoidectomy performed, feeling that perhaps a chronic adenoiditis was causing the fever. In April, 1931, the family left town and I did not hear any more about the child until March 22, 1933, when they returned. At that time the child had a cold and temperature of 99 and later 103. There was a profuse postnasal discharge. After this attack subsided the family finally consented to have the operation advised earlier. April 10, it was done. Since then the temperature has continued around 100 and 101, and then on some days it is around 99. The child seems to feel well but does not have much of an appetite at any time. I have also had the child take a series of ultraviolet ray treatments. He now weighs 29½ pounds (13.4 Kg.) and is 37¼ inches (94 cm.) tall. Is this a case of idiopathic hyperthermia, or what I have sometimes heard called growth hyperthermia? The mother told me that for a period of about one and one-half to two months while they were away he was free of fever. They were in Arkansas during the summer months. I can find nothing wrong with this child and still he has fever. Your opinion will be greatly appreciated.

PAUL R. MEYER, M.D., Port Arthur, Texas.

ANSWER.—This query brings up the subject of the cause of obscure fever in infancy and childhood. The answer to this frequent and difficult problem can be solved best by an exhaustive process of exclusion. Has he a chronic focus of infection somewhere in the pharynx, nasopharynx, ethmoid sinuses, lymph nodes of the neck, or in the thorax, or within the abdomen? Has he a pulmonary, cardiac or renal infection? Is there a latent rheumatic infection? All of these problems and many similar ones require thoughtful consideration before a functional diagnosis which is loosely covered by the term hyperthermia should be made. Does the fever disappear during rest and reappear during active muscular exercise? In such a case, if nothing else is found, one may assume that muscular activity and a labile temperature mechanism cause the elevation of temperature.

While these elevations of temperature in infants and young children are disconcerting to parents and physician alike, and while it is the duty of the physician to establish a positive organic diagnosis, if it is humanly possible, nevertheless there remains a group of these children in whom no definite cause can be found and who survive and become normal in spite of the temperature elevation. In these cases thermometry may be discontinued for a time and will not detract from the health of the child and will bring comfort to the mother and peace to the doctor.

ATABRINE—PLASMOCHIN

To the Editor:—Advertisement by the manufacturer claims that five days' administration of atabrine is sufficient to destroy both schizonts and gametocytes. Other attractive qualities are claimed for this agent. Please inform me whether these claims are true, and whether there is any great advantage in its use over quinine. Please discuss plasmochin.

M.D., Illinois.

ANSWER.—According to information received, Atabrine is a product of the I. G. Farbenindustrie in Elberfeld, Germany, and is proposed as a substitute or for use with "Plasmochin" in the treatment of malaria. It is sold in America by the Winthrop Chemical Company. The product is stated to be the dihydrochloride of a dialkylamino derivative of acridine (alkylamino-Alkylamino Acridinderivat, Ger.). It is stated that on the basis of laboratory experiments it may be assumed that Atabrine primarily affects the schizont stage of the plasmodium (Schizontenmittel, Ger.) and, in contrast with Plasmochin, exerts no action on the gametes of Plasmodium falciparum, the causative agent of estivo-autumnal malaria. Atabrine has not been accepted for New and Nonofficial Remedies, nor has the Winthrop Chemical Company requested consideration by the Council on Pharmacy and Chemistry.

According to the preliminary report of the Council on Pharmacy and Chemistry (THE JOURNAL, July 9, 1927, p. 113), Plasmochin is a synthetic quinoline derivative, developed in Germany and proposed for use in the treatment of malaria. For many years attempts have been made to find a substitute for quinine that would be cheaper, less bitter, less toxic and more specific than the natural drug. Plasmochin appears at least to represent a step forward in this search. However, according to von Oettingen (Therapeutic Agents of the Quinoline Group, American Chemical Society Monograph 64, 1933) it "cannot be considered as a substitute for quinine, but it seems to be valuable when quinine cannot be used, and as adjuvant in the administration of quinine on account of its specific toxicity for gametocytes which are more resistant to quinine than the schizonts. In small doses of 0.018 gram per day it may be a safe prophylactic against the transmission of malaria by mosquitoes."

Plasmochin is marketed by the Winthrop Chemical Company; this firm, however, has not submitted the evidence required to make the product acceptable for New and Nonofficial Remedies.

TREATMENT OF SYPHILIS

To the Editor:—I read Queries and Minor Notes with interest and would like your advice in the following case: I have been treating a woman, aged 27, for syphilis. Two years ago from another doctor she received five intravenous treatments of neoarsphenamine and then had a negative Wassermann reaction. Last fall she developed sores on her hands, which I diagnosed as syphilitic, and the Wassermann reaction in February, 1933, was four plus. Since that time she has received twelve intravenous injections of neoarsphenamine and fourteen intramuscular injections of bismuth sodium tartrate, 1.5 per cent. After the injections of bismuth were begun she noticed a tingling and numbness in her lower legs and ankles, but I did not connect this with the medication. By July of this year she was having considerable trouble with her feet and wished to discontinue the treatment. She has refused any more treatment until the neuritis leaves her feet. What I should like to know is, What form of treatment should I give her now? Is there anything that can be done to clear up the neuritis? How many more intravenous and intramuscular injections should she have to get a full course of treatment? In May, between the courses of neoarsphenamine and the bismuth compound I let her rest for two weeks and a Wassermann test taken at that time was negative. Is this worth considering correct when she has had so much treatment? Do you think I would be safe in letting the treatment go and making blood tests periodically? Kindly omit name.

M.D., Pennsylvania.

ANSWER.—It would seem to be essential in this case to determine more exactly the nature of the neurologic disturbance and particularly its possible relation to neurosyphilis as a form of relapse. The treatment given two years ago was precisely of the type that would invite some serious form of recurrence at about the present time, and the Wassermann test on the blood, although positive, by no means establishes the nature or

extent of the relapse. The tingling and numbness in the legs and ankles may therefore be an expression of a neurorecurrence or of the continued progression of an uncontrolled neurosyphilis, asymptomatic when the patient was first seen. The proper procedure, therefore, would seem to be a careful clinical examination plus an examination of the spinal fluid, which should be complete and not confined merely to a Wassermann test. Lacking the information these examinations would afford, one proceeds entirely in the dark with the continuance of treatment and the patient may well find herself in a serious situation through her refusal to continue treatment, or the physician may be embarrassed by complications which a more careful examination could have prevented. Under no circumstances should the matter be allowed to rest in its present state or the problem evaded simply by the repeated taking of blood tests.

SENSITIVITIES TO DUST AND CHANGES IN TEMPERATURE

To the Editor:—A man, aged 42, suffers with frequent attacks of coryza, sneezing, lacrimation, itching of the nasal mucous membranes with watery discharge, fulness and pressure in the head, sweating of the head and scalp, and sensations of cold and chilliness. He conducts a small grocery store, and when he goes into the refrigerator or is in a draft the condition becomes worse. It has existed about four years and is more severe in winter than in summer. The symptoms are quite typical of hay fever, but apparently the sensitivity is due to some substance to which he is continually more or less exposed. I would appreciate your suggestions and the general results expected by desensitization if the offending substance is identified by skin test. Kindly omit name.

M.D., Connecticut.

ANSWER.—The patient in all probability is sensitive to the dust in the store. This dust should be collected, the dust that is tracked into the store from the outside being avoided as much as possible. It should be collected from behind the counters, under the counters and from the walls with an electrical whisk broom. The dust should be extracted in as concentrated a solution as possible, filtered through stone and diluted down serially. It can be used for diagnosis and therapy (Cooke, R. A.: Studies in Specific Hypersensitiveness: New Etiologic Factors in Bronchial Asthma, *J. Immunol.* **7**:147 [March] 1922).

He is probably in addition sensitive to heat and effort or to cold, one cannot determine which from the history; but specific methods of testing can be carried out (Duke, W. W.: Clinical Manifestations of Heat and Effort Sensitiveness and Cold Sensitiveness [Relationship to Heat Prostration, Effort Syndrome, Asthma, Urticaria, Dermatoses, Noninfectious Coryza and Infections], *J. Allergy* **3**:257 [March] 1932).

DOSAGE OF HEXYLRESORCINOL AS ANTHELMINTIC

To the Editor:—I notice an answer to a correspondent in regard to the use of hexylresorcinol as an anthelmintic. In answer, you give the dose as 0.1 Gm. for each year of age up to 1 Gm. Now the only form of this drug with which I am familiar is Sharp and Dohme's Hexylresorcinol Solution S. T. 37. I consulted Dorland's Medical Dictionary and find the following: "Hexylresorcinol: A white, waxy, stable solid. It is a powerful germicide with a phenol coefficient of 46. Dose 2½ to 10 minims (0.15-0.6 cc.) three times a day." This bewilders me, giving the dose of a solid in minims. Please set me right in regard to this. Please omit name.

M.D., Iowa.

ANSWER.—Some solids are customarily measured by volume rather than weight, such as wheat and corn, but it would seem a bit awkward to measure out minim doses of the solid hexylresorcinol. The dosage of 0.1 Gm. up to 1 Gm. of crystalline hexylresorcinol for 1 year of age is an effective anthelmintic dose against ascaris and hookworm.

Tetrachlorethylene is in all probability as effective as carbon tetrachloride and, theoretically, is decidedly preferable on account of causing no liver damage or any other intoxication that has been discovered. Clinically, it seems to be as effective as carbon tetrachloride and, as far as we have been able to determine, has produced no true intoxication. Like any anesthetic when taken by mouth, it may cause slight temporary giddiness which should not be considered an intoxication. The only contraindication known against its use is in cases of mixed infestation in which both ascaris and hookworm are present, in which condition it may cause migration of ascaris with complications.

Hexylresorcinol has been found to be extremely effective against ascaris, reductions of 95 per cent or over having been obtained. It is less effective against hookworm but in the treatment of large numbers of cases an average reduction of 75 per cent in egg counts may be expected, while better results have been obtained in carefully controlled cases.

INDUSTRIAL HAZARD FROM LACQUER USED IN MAKING ARTIFICIAL FISH BAIT

To the Editor:—I have a young woman patient who works in an artificial fish bait factory where a great deal of Dupont lacquer is used in painting the bait. She continually has a severe rhinitis, with the membranes of the nose practically closing the air passages. When she is away from the factory a few days she has no trouble, so I feel that it is from the lacquer. Do you have any experience in what to do for this condition?

C. PHILIP FOX, M.D., Garrett, Ind.

ANSWER.—The condition described may occur in certain individuals, especially if the solvent vapors are too concentrated in the workroom and if the person concerned has enlarged turbinates. Occasionally individuals react to solvent vapors, manifesting symptoms such as nausea, eye irritations and skin irritations, and the other persons employed in the same room show no reaction whatever. In some cases it is necessary to remove these individuals from this type of work.

If ventilation is not adequate to carry away the solvent vapors, steps should be taken to make improvements along this line. If the individual is the only one among a group working under the same conditions who is suffering from this irritation, it may be necessary to remove her from this type of work. If she has hypertrophied turbinates, possibly their removal will help to clear up the situation.

EFFECTS OF RADIATION ON PRODUCING ABORTION

To the Editor:—I have a patient, a woman, aged 38, who had a rectal pruritus and was given at weekly intervals unfiltered x-ray treatments for a period of one minute for three treatments, with the tube some 6 inches from the skin. No lead protection was used. About the time she reported for the first treatment of x-rays to the dermatologist she missed a menstrual period and showed some breast changes of pregnancy. About one week after the last x-ray exposure she commenced having uterine pains and passed some decidua. Did the x-ray exposure have anything to do with this abortion, in your opinion? I do not know the voltage or milliamperage used in the treatment. I am not asking this question because there are any medicolegal questions involved but purely for information.

EARL B. GERLACH, M.D., Huntington, W. Va.

ANSWER.—From 50 to 60 per cent of a skin unit dose has been found to be a little above the castration dose. This amount of exposure to x-rays results in abortion. It is possible to induce abortion by administering less than the castration dose. Without a knowledge of the voltage and amperage, it is impossible to estimate the dose of radiation administered in this case.

IMMUNIZATION OF CHILDREN

To the Editor:—With the increasing number of biologicals offered for conferring immunities, the problem of which and when to administer becomes confusing. Kindly give me as nearly as possible the ideal schedule for the average child without overdoing it. In other words, when and what immunizing administration should every child have to secure adequate projection without running unnecessary risks of anaphylaxis? Please omit name.

M.D., Georgia.

ANSWER.—Every child should be vaccinated against smallpox and immunized against diphtheria. The child should be vaccinated against smallpox early in life. It has been shown that the earlier the vaccination is done, the less severe is the reaction and the less danger of complications. After the child has been successfully vaccinated against smallpox, he should be immunized against diphtheria. This may be done any time after the sixth month of life. Diphtheria toxoid, which contains no animal serum and consequently eliminates sensitization, is in common use. For children over 4 years of age, toxin antitoxin, prepared with goat or sheep serum, is preferred by many physicians because of the less severe local reaction.

Whether other immunizing agents should be given in the routine manner is still a question. In the presence of an epidemic, the appropriate immunizing agent should certainly be given.

EFFECTS OF IODIDE ON NASAL MUCOSA

To the Editor:—Kindly send me information regarding the pharmacology of potassium iodide in large and in small continued doses over a long period of time on the nasal mucosa. Kindly omit name.

M.D., Chicago.

ANSWER.—There is not a doubt that some of the iodide is eliminated by the nasal mucosa and also that such elimination may occur without any obvious phenomena, whether large or small doses are consumed and for a long time. On the other hand, the symptoms of iodism may appear even after small doses given for a short time. Indeed, they seem to occur more commonly after small doses given at short intervals during the day than after large doses given less frequently and after meals. The symptoms consist of a catarrhal inflammation of the nose

and adjoining mucous membranes with swelling, softness and sponginess of the mucosa and profuse secretion, accompanied by sneezing, a burning sensation in the nose, and a sense of occlusion and oppression. There may be a loss of smell, and frontal or maxillary sinus pain. The symptoms disappear shortly after the suspension of the drug. It is probable that previous diseases of the nasal mucosa cause these symptoms to appear earlier and more intensely than is the case with normal mucosa.

SKIN ERUPTIONS AFTER PHENOBARBITAL

To the Editor:—A patient presented himself to my office a few days ago to consult me concerning a peculiar eruption resembling psoriasis. The history of his case shows that he has had epilepsy for fifteen years and has been taking 1½ grains (0.1 Gm.) of phenobarbital three times a day (4½ grains, or 0.3 Gm., daily), for a period of fifteen years. I am interested to know whether the long continued use of phenobarbital will produce skin manifestations. This patient has been suffering intermittently from this skin condition for a period of nine months. The character of the lesions and the distribution do not conform to any of the common skin diseases with which I am familiar. Therefore, I am led to believe that the drug might be the cause of his condition. Please advise me.

M.D., Rhode Island.

ANSWER.—Phenobarbital (luminal) is well known to have a tendency to produce eruptions of various kinds and it is entirely within the range of probability that the eruption may be due to it. The test of temporary discontinuance of the medicine and its resumption after the disappearance of the eruption will provide definite proof.

POSITION OF MOTHER WHILE NURSING BABY

To the Editor:—What, if any, are the reasons for requiring a young mother, each time she suckles her baby, 6 weeks of age, to do so lying down; in other words, go to bed? This mother made a good recovery and has been up and around several weeks, feeling fine. The only reason she herself can give is that she is following Dr. Bundesen's book.

JOHN B. MILLER, M.D., Long Beach, Michigan City, Ind.

ANSWER.—There is no special reason why a woman should lie down either on a bed or on a couch to nurse her baby. In fact, it is better for her to sit up, although it does not matter much whether she lies down or sits up, so long as she is comfortable. It is wise to warn the young mother not to look at the baby constantly while the latter is at the breast, because this not only strains the eyes of the mother and occasionally produces headaches but it also strains the muscles of the neck and back, which likewise may become the seat of pain.

MUSCULAR DYSTROPHY

To the Editor:—Please outline treatment, if any, for pseudohypertrophic muscular atrophy in a boy, aged 10 years. Please omit name.

M.D., Canada.

ANSWER.—There are two rather new methods of treating muscular dystrophy: 1. By hypodermic injections of epinephrine and pilocarpine on alternating days, 0.2 cc. of 1 per cent solution of each: this is based on the not generally accepted theories of Ken Kuré. 2. Glycine (glycocoll, gelatin sugar), from 10 to 30 Gm. daily by mouth. This treatment, proposed by the German physiologist Karl Thomas, has been tried at the Mayo Clinic with rather indifferent results (*Proc. Staff Meet., Mayo Clin.* **7**:557 [Sept. 28], 737 [Dec. 28] 1932).

POLIOMYELITIS

To the Editor:—In this community there is a mild epidemic of acute anterior poliomyelitis. Please advise on the following: 1. Is there any serum that has shown good results? 2. Is immune serum a proper treatment and should it be given early? Please omit name.

M.D., Pennsylvania.

ANSWER.—1. There is no commercial serum available with established curative action in epidemic poliomyelitis.

2. If by "immune serum" is meant the serum from persons who have had the disease—convalescent serum—the answer is that it is quite in order to inject such serum, the earlier the better. While opinion is divided as to the results of treatment with convalescent serum, its use seems logical and harmless.

TOXICITY OF HYDRAZOIC ACID

To the Editor:—In your answer to Dr. Côté (THE JOURNAL, August 12, p. 546), you give some references to work on the toxicity of hydrazoic acid. It is of interest to note that a full investigation of the toxicity of this acid was made by Letchworth Smith and myself thirty years ago in the Chemical Laboratory of Cornell Medical College, New York. The results of this investigation were published in the *Journal of Medical Research* under the title "The Physiological Action of Azoimid," volume XII, No. 4, 1904, pages 451 to 473.

C. G. L. WOLF, M.D.,
John Bonnett Memorial Laboratory, Addenbrooke's Hospital, Cambridge, England.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written.* Boston, Chicago, Cleveland, New York, Philadelphia, St. Louis and San Francisco, Oct. 28. *Oral.* New York, Dec. 13-16. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written (Group B Candidates).* The examinations will be held in various cities of the United States and Canada, Dec. 9. Application necessary before Nov. 1. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: Cleveland, June 11. Sec., Dr. William H. Wilder, 122 S. Michigan Blvd., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Cleveland, June 11. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

ARKANSAS: *Basic Science.* Little Rock, Nov. 6. Sec., Mr. Louis E. Gebauer, 701 Main St., Little Rock. *Regular.* Little Rock, Nov. 14. Sec., Dr. A. S. Buchanan, Prescott. *Homeopathic.* Little Rock, Nov. 14. Sec., Dr. Allison A. Pringle, Eureka Springs. *Eclectic.* Little Rock, Nov. 14. Sec., Dr. L. L. Marshall, 401 W. 3d St., Little Rock.

CALIFORNIA: *Reciprocity.* Los Angeles, Dec. 6. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

CONNECTICUT: *Regular.* Hartford, Nov. 14-15. *Endorsement.* Hartford, Nov. 28. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Homeopathic.* New Haven, Nov. 14. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

FLORIDA: Jacksonville, Nov. 13-14. Sec., Dr. William M. Rowlett, Box 786, Tampa.

KENTUCKY: Louisville, Dec. 5-7. Sec., Dr. A. T. McCormack, 532 W. Main St., Louisville.

MAINE: Portland, Nov. 14-15. Sec., Dr. Adam P. Leighton, Jr., 192 State St., Portland.

MASSACHUSETTS: Boston, Nov. 14-16. Sec., Dr. Stephen Rushmore, 144 State House, Boston.

NATIONAL BOARD OF MEDICAL EXAMINERS: The examinations will be held at centers in the United States where there are five or more candidates, Feb. 14-16. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

NEBRASKA: Lincoln, Nov. 22-24. Director, Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEVADA: Carson City, Nov. 6. Sec., Dr. Edward E. Hamer, Carson City.

NORTH CAROLINA: Raleigh, Dec. 4. Sec., Dr. B. J. Lawrence, 503 Professional Bldg., Raleigh.

OHIO: Columbus, Dec. 6-8. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

SOUTH CAROLINA: Nov. 14. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

WEST VIRGINIA: Morgantown, Nov. 16-18. State Health Commissioner, Dr. Arthur E. McClue, Charleston.

South Carolina June Report

Dr. A. Earle Boozer, secretary, State Board of Medical Examiners of South Carolina, reports the written examination held in Columbia, June 27-29, 1933. The examination included 70 questions. An average of 75 per cent was required to pass. Thirty-five candidates were examined, all of whom passed. Two physicians were licensed by reciprocity and one physician was licensed by endorsement. The following colleges were represented:

PASSED	Year Grad.	Per Cent
Georgetown University School of Medicine	(1931)	83.1
Emory University School of Medicine	(1932)	77
University of Maryland School of Medicine and College of Physicians and Surgeons	(1933)	81.8
Jefferson Medical College of Philadelphia	(1929) (1933)	83, 88.1
Medical College of the State of South Carolina	(1933)	79.3, 81.4, 81.5, 81.8, 82.1, 82.3, 82.3, 82.6, 82.6, 82.8, 83.5, 84.1, 84.4, 84.6, 85.3, 85.4, 85.4, 86.4, 86.4, 87.4, 87.5, 87.7, 88.3, 88.3, 89.6, 90.1, 92.3
Meharry Medical College	(1932)	75, 79.3

LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Western Pennsylvania Medical College	(1931)	Penna.
Medical College of Virginia	(1929)	N. Carolina

LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Columbia University College of Phys. and Surgs.	(1930)	N. B. M. Ex.

District of Columbia July Examination

Dr. W. C. Fowler, secretary, Commission on Licensure, reports the written examination held in Washington, July 10-11, 1933. The examination included 60 questions. An average of 75 per cent was required to pass. Twenty-two candidates were examined, all of whom passed. The following colleges were represented:

PASSED	Year Grad.	Per Cent
Yale University School of Medicine	(1931)	83.6
George Washington University School of Medicine	(1931)	84.5, 84.6, (1932) 81.3, 82.9, 83.5, 83.6, 86.6, 87.3, 88.1, 91

Georgetown University School of Medicine	(1932)	83.7, 85.4, 86.3, 88.3, 88.9
Howard University College of Medicine	(1932)	85.9
Medical College of Virginia	(1932)	88.3
University of Virginia Department of Medicine (1930) 87.2, (1932) 85.7	(1929)	84.7,
Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultasa, Budapest	(1895)*	79.1

Eleven physicians were licensed by reciprocity from January 28 to August 12. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Howard University College of Medicine (1929) Kansas, Virginia 2, (1930) Maryland		(1928)	Virginia,
College of Physicians and Surgeons of Baltimore		(1908)	Maryland
University of Michigan Medical School?		(1929)	Michigan
Columbia Univ. College of Physicians and Surgeons		(1909)	Montana
Syracuse University College of Medicine		(1920)	New York
Hahnemann Med. College and Hosp. of Philadelphia		(1906)	Penna.
University of Virginia Department of Medicine		(1929)	Virginia

*Verification of graduation in process. License withheld pending inspection of diploma.

Book Notices

Light Therapy. By Frank Hammond Krusen, M.D., Director of the Department of Physical Medicine, Temple University School of Medicine, Philadelphia. Foreword by John A. Kolmer, M.D., Dr.P.H., D.Sc., Professor of Medicine, Temple University School of Medicine. Cloth. Price, $3.50. Pp. 186, with 33 illustrations. New York: Paul B. Hoeber, Inc., 1933.

Succeeding ages have practiced light therapy in accordance with limited experience, out of which arose unorthodox opinions and a literature based on empiricism. Modern biologic sciences have sought and attained concrete evidence of the therapeutic efficacy of light, as evidenced by the recent literature which formulates opinions on the basis of controllable facts. The aim of this book is to differentiate facts from current fallacies and to present a serviceable technic for the employment of various agencies used in light therapy. The author has drawn on authoritative sources to such a proportion that the work impresses one as a commentary rather than an exposition based on his personal experience, a characteristic amounting to self effacement. Theory is weighed against fact, physics is correlated with physiology, and clinical results are shown to be dependent on biophysical factors. Separate chapters have been devoted to a review and an analysis of the physical and physiologic properties of light, the author defining the source and nature of light energy and concisely discussing its methods and technics of administration, with its dangers, limitations, and indications. While the work offers a satisfactory evaluation of light therapy, embracing a range from infra-red to ultraviolet, its value would have been enhanced had the author included the recent conclusions of the Council on Physical Therapy. Perhaps certain minor shortcomings, for example, the misinterpretation of the effects of the so-called cold quartz rays on vitamin D, are due to the completion of the book prior to the Council's announcement. On the whole the book is a timely and practical contribution, which may be accepted by general practitioners as a safe guide in light therapy.

Stop That Smoke! By Henry Obermeyer. Cloth. Price, $2.50. Pp. 289, with illustrations. New York & London: Harper & Brothers, 1933.

"Smog," the combination of smoke and fog, is indicted, convicted and sentenced in this book for one of the high crimes and misdemeanors of the century. Destroyer of buildings, polluter of the air, robber of ultraviolet, foe of economy, thief of light—all these is "smog." The book is a lengthy compilation of facts which all know more or less, though perhaps not in terms of the figures which the author quotes until their reiteration grows tiresome, and the mind, unused to thinking in terms of billions, wearily slides over them with a simple realization that they are enormous, which is after all perhaps all that is necessary. Little progress has been made in smoke abatement, as compared with what has been done for the purification of the water supply, the author points out, probably because smoke damage is insidious and not spectacular as may be the outbreaks of epidemic water-borne disease. He makes a plea, with the fervor of a crusader, for elimination of smoke as an economic and public health measure, with preservation of ancient art treasures now undergoing destruction from exposure to smoke, and other esthetic values as by-products scarcely less valuable than the central motives. He overlooks no possible interest or motive to which he might appeal. Near the end of the book are some practical chapters about how smoke abatement can be accomplished, from the great factory to the home furnace. Except that it might have been much briefer, this is a good and useful book which will probably, human nature being what it is, have much less of a salutary influence than it ought to have.

L'héliothérapie. Par le Docteur Henri Dausset, chef du service central de physiothérapie de l'Hôtel-Dieu. IV. Actinothérapie I. Paper. Price, 15 francs. Pp. 115. Paris: Gauthier-Villars & Cie, 1932.

This small volume is a condensed discussion of the clinical value of heliotherapy, being one of three dealing with actinotherapy. It discusses in six chapters the therapeutic application of heliotherapy in selected conditions on the basis of its physiologic effects. Beginning with a brief review of the physical nature of the solar spectrum, the book takes up the theories of light and radiation, the effect of light absorption by various atmospheric filters, and the methods used for its detection and measurement. These physical expositions are followed by a consideration of the technic utilized by the author and other authorities in various disorders, with particular reference to the combined values of open air and sunlight and their photochemical and physical properties influencing living organisms. Nudism is accepted by the author as a physiologic means of securing the full benefit of open air and sunshine and rejected as a fad with pornographic coloring. The author cites for this view the opinions of Viard, Mongeot, de Pathout, de Vachet and others to the effect that, when sanely employed, nudism will benefit the individual and the race. One of the most informative chapters is concerned with a discussion of how heliotherapy works. It deals with the mode of action and physiologic effect of sunlight and open air as related to various organs of the body. Attention is directed to the influence of cosmic rays, the so-called delta rays of Millikan. The author introduces the speculative thought that these deeply penetrating rays may have a powerful although an inexplicable physiologic effect. He feels that in the light of recent studies by Professor Piccard in connection with his research in the stratosphere, there is promise of new experience of value to the biologic sciences. The remainder of the book is devoted to the interpretation of the clinical effect of heliotherapy, a part of which considers irradiation of food material. The book has successfully presented virtually the entire problem of heliotherapy in a condensed form in accordance with the latest opinions on the subject.

Workmen's Compensation: Its Medical Aspect. By Sir John Collie, C.M.G., D.L., M.D. Consulting Medical Officer to the Ministry of Pensions. Cloth. Temporary price, $2.25. Pp. 160. Baltimore: William Wood & Company, 1933.

All those who are in any way associated with the administration of the medical phases of workmen's compensation in the United States will welcome this volume, which deals with the workmen's compensation acts of England in a thorough and convincing manner. The author presents in a lucid style and a concise form the growth of compensation and the legal and medical aspects of the medical phases of compensation as they have been modified from time to time. In his discussion of the growth of compensation, he says:

> It is thirty-six years since the first Act was passed, and it may be opportune now to envisage the present position, which certainly affords material for reflection. It was calculated by the Home Office, in affording information as to the probable effect of the passing of the Act of 1897, that 150,000 accidents a year would fall within its scope. In the seven principal industries for which accurate statistics are obtainable, the number of cases of accident in which compensation under the present Act was paid in 1930 amounted to 461,139; in addition there were 2,303 uninsured employers who reported that they were paying compensation in respect of accidents sustained by their employees.

He makes the further comment:

> It is to be hoped that the limit to which compensation is applicable has now been reached, and that any future legislation will tend to be restrictive; although one realizes it is easier to give than to take away what has once been given.

It is significant that such statements might easily have been made about workmen's compensation in the United States. An excellent chapter, with illustrations taken from court rulings,

is devoted to the subject "What is an accident?" The discussion in the chapters on the law and medical examination and the law with regard to operations is well supplemented by quotations from court decisions. One chapter is devoted to the consideration of the position consequent on complete or partial recovery, and another sets forth the conditions surrounding return to work. Although the reader must always be conscious that the author is discussing workmen's compensation as it is operated in England, there is much of value in the principles enunciated. The author has treated a dry and complex subject in a delightfully entertaining manner.

Hints to the Young Practitioner. By G. Francis Smith, M.R.C.S., L.R.C.P., Consulting Surgeon, Peace Memorial Hospital, Watford. Cloth. Price, $1.50. Pp. 150. New York & London: Oxford University Press, 1932.

This book, written for the young practitioner by a British colleague of considerable experience, is planned to make easier the way of the young man, exactly as the preceptor of the past did for the young apprentice. He therefore advises the young man in the selection of a practice, the features of general practice, the problems that arise in relationship to difficult cases, venereal diseases, conjugal relations, and the care of children. He discusses medical societies and hospitals, financial matters, vacations, and particularly the relationship of the physician to panel practice as it has developed in England. To an intelligent reader it seems that much of what the author writes ought to be guessed at by any other intelligent man, but in his presentation this author is exceedingly interesting, particularly because he recites cases from his own practice to illustrate his points. In his conclusions he suggests that too much civilization is responsible for most of the troubles that have come to the physician, and that part of his duty is to overcome these extraordinary refinements.

Melioidosis. By A. T. Stanton, C.M.G., M.D., F.R.C.P., Chief Medical Adviser to the Secretary of State for the Colonies, and William Fletcher, M.D., M.R.C.P. Studies from the Institute for Medical Research, Federated Malay States. No. 21. Cloth. Pp. 59, with 37 illustrations. London: John Bale, Sons & Danielsson, Ltd., 1932.

This monograph consists chiefly of observations made in the Malay States over a number of years on the disease called melioidosis. It is a rare but deadly disease of man and animals, being found chiefly in rodents. Eighty-three human cases have been reported, all except two of which were fatal. They occurred in Burma, Malaya, French Indo-China and Ceylon. The authors believe it to be a more common disease than usually supposed. It is known to attack animals in the Malay States, Ceylon and the Dutch East Indies. In Kuala Lumpur it has been found in guinea-pigs, rabbits, rats, cats, dogs, and once in a horse. Owing to the fact that almost any part of the body may be attacked, there are no cardinal symptoms on which a diagnosis may be made. The causative organism, Bacillus whitmori, a member of the Pfeifferella, must be isolated before the true nature of the disease may be known. Infections of great virulence have a sudden onset and may resemble cholera, and in the septicemic cases death has occurred within the first seventy-two hours. When the initial infection is less virulent the disease may resemble plague, malaria, typhoid, liver abscess, infective endocarditis or general tuberculosis. Bacillus whitmori is easily cultivable on all common laboratory mediums; one of its chief cultural characteristics is its growth on 5 per cent glycerin agar. On this medium, growth is rapid and within forty-eight hours the colonies take on a characteristic wrinkled appearance resembling the surface of a mold. While Bacillus whitmori is closely related to Bacillus mallei serologically and immunologically, it can be distinguished from the latter organism chiefly by its motility in young cultures and its corrugated appearance on glycerin agar. The organism is highly resistant outside the body, being able to resist drying and to live in water for comparatively long periods. It is sensitive to heat and the action of ordinary disinfectants. Little is known about its method of dissemination. There is no evidence of direct infection from man to man, and the authors believe that infection probably takes place through the consumption of food contaminated with the feces of rodents. The illustrations portray clearly the various aspects of the disease in man and in animals, and also the appearances of the colonies of the organism when grown on various mediums.

Acidosis and Alkalosis. By Stanley Graham, M.D., F.R.F.P.S., Leonard Gow Lecturer on the Medical Diseases of Infancy and Childhood, University of Glasgow, and Noah Morris, M.D., B.Sc., D.P.H., Lecturer in Biochemistry, University of Glasgow. Cloth. Temporary price, $2.25. Pp. 203, with 23 illustrations. Baltimore: William Wood & Company, 1933.

This small book fulfils the purpose, stated in the preface, "to give a general survey of the subject and its application to disease, keeping in mind the needs of those not versed in recent chemical physiology." The introduction offers a simple explanation of the acid-base equilibrium of the body and is followed by an elucidation of the reaction of the blood. Van Slyke's classification of disturbances of acid-base balance is explained and is followed by Haldane's classification. The body defenses against alkalosis and acidosis are detailed together with methods for their determination. The last two thirds of the book is occupied with an application of chemical physiology to clinical medicine. The essential chemical features of diabetes, nephritis, gastro-enteritis, cyclic vomiting, ketosis, salicylate poisoning, anesthesia acidosis, tetany and pyloric stenosis are presented and logical methods of treatment are suggested.

The Practitioners Library of Medicine and Surgery. Volume IV: Nontraumatic Surgery. [George Blumer, Supervising editor.] Associate editor, Theodore S. Moise, Jr., B.A., M.D., Surgeon to the Eastern Maine General Hospital, Bangor. Cloth. Price, $10. Pp. 1146, with illustrations. New York & London: D. Appleton & Company, 1933.

In this complete system of medicine and surgery, nontraumatic surgical conditions have been separated from the traumatic. Hence this volume is concerned with lesions of the skin and subcutaneous tissues, tumors, diseases of the breast, surgery of the neck, diseases of the thyroid gland, surgery of the brain and spinal cord and of the peripheral nervous system, surgery of the heart, the blood vessels and the chest, also of the gastro-intestinal tract as a whole, the lymphatics, the spleen, hernia, bones and joints, the urinary tract and the genitalia. There are some hundreds of illustrations which have been well chosen. The vast amount of material included in the book makes it almost an outline rather than an extended consideration of any single subject. Nevertheless it provides much immediate practical information, especially for general practitioners, who may be considered primarily users of a book of this character. There are extensive considerations of technic, with illustrations taken in many instances from other works. However, many of the pictures seem to have been made especially for this volume. The authors have been chosen because of previous contributions on the subjects they discuss. It is interesting that the majority of the authors are not the professors of surgery whose names are most frequently found in medical periodical literature but in most instances associates, instructors, and assistants in various surgical departments. On the whole, they have done their work well, so that the book constitutes a most useful reference. The vast majority of general practitioners will, of course, be most interested in those sections dealing with hernia, infections and the bones and joints rather than with the intimate details of surgery of the brain and spinal cord. The volume has an excellent index, which adds also to its usefulness.

Die Bruchoperation nach Bassini. Von Doktor Attilio Catterina, o. ö. Professor der chirurgischen Operationslehre an der kgl. Universität in Genua. Cloth. Price, 12 marks. Pp. 56, with 16 illustrations, von Maler Horatius Galgher. Berlin: Urban & Schwarzenberg, 1933.

This is limited to a detailed description of the Bassini operation for inguinal hernia, with colored illustrations showing the surgical anatomy and technic of each step. The author was an assistant to Bassini, dedicates the volume to his master and states that, since Bassini first described his operation, more than forty years ago, numerous modifications have been suggested by various surgeons. Some of these have been advanced as new operations and some have ignored the fundamental purpose of the original operation and consequently have been to its discredit. Surgeons, in general, are not carrying out all the steps of the operation in accordance with the technic suggested by Bassini. This is partly, at least, due to the fact that Bassini, in his original contribution (strangely enough the exact reference appears nowhere in the volume) was too brief in his exposition, and the illustrations, while excellent, were too few and were limited to the purely anatomic part of the operation. Perhaps for this reason, too, the details of the operative technic

as described in the modern works on surgery differ greatly from Bassini's. The author, as a student of Bassini's, presents this new volume to correct these errors. He describes the operation step by step, illustrating each with a full-page colored drawing. These drawings are unusually good, show the field life size, and greatly enhance the detailed written description of each step. The last thirteen pages of the book discuss the treatment of special complications encountered during the operation, as hernia and hydrocele; hernia and varicocele; inflammations of the testicle, particularly tuberculosis; tumors of the testicle; special disorders of the hernial sac, as tuberculosis, echinococcus, tumors and foreign bodies in the hernial sac; hernia and undescended testis; special and rare types of hernia, as hernia of the bladder, supravesical hernia, intraparietal and interstitial inguinal hernia, inguinoproperitoneal hernia and sliding hernia, and injury to the ductus deferens. It ends with a discussion of late recurrence and its treatment. The book is unique, interesting and valuable for both the beginner in surgery and the experienced surgeon.

Some Factors in the Localisation of Disease in the Body. By Harold Burrows, C.B.E., F.R.C.S., Assistant at the Research Institute of the Cancer Hospital (Free). Cloth. Price, $4.50. Pp. 299, with 8 illustrations. Baltimore: William Wood & Company, 1932.

The author has collected in this interesting volume the various factors that have to do with the permeability of the blood vessels and tissues. The book is divided into three parts. The first part is concerned with the permeability of the capillary endothelium to various soluble and insoluble substances and dyestuffs under different conditions, followed by an account of the penetration and localization of the common bacteria and viruses. The second part deals with the relation of such permeability and localization to various disease processes and inflammations. The third part discusses the practical importance of the factors described and their importance in the understanding of infections and tumor metastases. Valuable therapeutic suggestions are given.

Materia Medica, Pharmacology and Therapeutics. By Maude B. Muse, R.N., A.M., Assistant Professor in Nursing Education at Teachers College, Columbia University. Cloth. Price, $2.75. Pp. 627, with 71 illustrations. Philadelphia & London: W. B. Saunders Company, 1933.

If there is such a thing as a book being "too good" for the purpose for which it is intended, the present one is an example. A good textbook for a review course for a medical student, it seems hardly the book for a nurse. Quite a bit of it—that portion referring to experimental pharmacodynamics—might have been deleted or printed in small type for optional reading, with considerable improvement in its value as a textbook for nurses. The fact that the nurse does not need the same kind of instruction as the doctor seems to have been overlooked by the author. That portion, on the other hand, devoted to physical therapy and psychotherapy, even though richer than most other books for nurses, might well have been considerably enlarged and a chapter on occupational therapy added.

Epidemiological Study of Scarlet Fever in England and Wales Since 1900. By Hilda M. Woods. Medical Research Council. Special Report Series, No. 180. Paper. Price, 1s.3d. Pp. 61, with illustrations. London: His Majesty's Stationery Office, 1933.

This pamphlet is an account of the study of the statistics on scarlet fever and its spread in the last thirty years. Many interesting facts are brought out, particularly the relation of the spread of the disease to conditions such as to crowding; also, the failure of the control of the disease by means of isolation. Interesting comparisons are made of the mortality figures present and past. The study is complete and is of especial interest to epidemiologists.

Social Problems and Social Processes: Selected Papers from the Proceedings of the American Sociological Society, 1932. Edited by Emory S. Bogardus. Cloth. Price, $1.50. Pp. 154. Chicago: University of Chicago Press, 1933.

This volume makes available the selected papers from the proceedings of the American Sociological Society for 1932. It discusses the effects on various classes of the social processes now going on, including the rural groups, Negroes, Chinese, Russians and Asiatics. There is also a general discussion of the nature of social processes and their analysis.

The Health School on Wheels. By J. Mace Andress, Ph.D., and I. H. Goldberger, M.D., Assistant Director of Health Education, New York City Public Schools. The Story Series in Health. Cloth. Price, 80 cents. Pp. 399, with illustrations. Boston & London: Ginn & Company, 1933.

This book is intended for the sixth grade child. It takes the sixth graders on sightseeing tours, of which there are twenty-six. In these tours various health subjects are considered, such as water supply, markets, restaurants, barber shops, factories, mosquito breeding places, recreation centers and schools. It gives consideration also to first aid, fire fighting, noise, housing, country vacations, and milk. The information presented is authentic, the style is bright and interesting. Contrasts are offered between pioneer days and today. Illustrations are frequent and satisfactory. The tours are followed by questions and also by useful lists of new words which have been learned on that particular trip. Interesting bits, such as the fact that Abraham Lincoln was the first president of the United States "to splash his way to cleanliness in a White House bath tub" enliven the text, intrigue the interest and make the dull subject of health palatable to the inquiring youngster. There is a good glossary and index. Suggestions to the teacher for weighing-measuring are up to date. No height-weight tables are given, but instead a chart is published on which the child's progress in height and weight can be recorded, thus substituting progress in the child's own growth as a criterion for the now discredited comparison with height-weight standards of the group. Not only is this an excellent textbook for sixth graders, but, in communities where the schools do not use it, physicians should find it useful to recommend to parents as a health book to put into the hands of youngsters.

Thérapeutique médicale. VI. Cœur et sang. Par M. Loeper avec la collaboration de MM. A. Lemaire, E. Donzelot, Ch. Aubertin, A. Clerc, G. Marchal, R. Bolgey, M. Mouquin, P. Emile-Weil et A. Tzanck. Paper. Price, 45 francs. Pp. 312, with 31 illustrations. Paris: Masson & Cie, 1933.

This is the sixth volume of a series, in the French language, sponsored by the department of therapeutics of the Faculty of Medicine of Paris. It takes up, in practical detail, the various important remedies employed in diseases of the heart and of the blood. Like the other books of this series, it constitutes a valuable addition to the reference library of any practicing physician capable of reading French, and is invaluable to the teacher of therapeutics as representing the French point of view and practice.

The Duties of Ohio Public Health Commissioners. By W. W. Charters, Director, Bureau of Educational Research, Ohio State University, and Darwin A. Hindman, Associate Professor of Physical Education, Ohio State University. Bureau of Educational Research Monographs, Number 17. Ohio State University Studies. Edited by Josephine H. MacLatchy, Ph.D. Paper. Price, $1. Pp. 70. Columbus: Ohio State University, 1933.

This is a statistical analysis of the activities of public health activities in Ohio based on the work of 56 out of a total of 180 commissioners. It led to the establishment of a course for public health officers with a curriculum of work now being done by the majority of health commissioners in Ohio. The activities are collected into headings such as laboratory and engineering activities, vital statistics, control of disease, administrative activities and educational functions.

Handbook of Tuberculosis Schemes for Great Britain and Ireland. Seventh edition. Paper. Price, 5/. Pp. 162. London: National Association for the Prevention of Tuberculosis, 1933.

This edition of the handbook is a valuable compilation, for the use of British physicians. It sets forth in a complete and well organized manner the tuberculosis problem and the activities that are in movement against the disease. This information, being given for shires and boroughs, enables one to study the British situation in detail. Separate sections of the report deal with England, Wales, Scotland and Ireland. There is also a list of residential institutions, which includes a description of the institution and information as to its capacity. The interest of this report to the American physician is largely in the information it gives about the treatment of tuberculosis through governmental agencies, which seems to leave little or nothing for the private practitioner to do. For example, in the borough of Southport, having a civil population of 77,280, residential in character, with a total death rate of 1,496 per

hundred thousand and a tuberculosis death rate of 63 per hundred thousand, there is a tuberculosis dispensary open one day a week and a sanatorium available with thirty-six beds. There is no open-air school, however. There is a chief administrative officer and an assistant tuberculosis officer. In other boroughs of varying sizes, similar situations prevail. The book is obviously a reference volume for the British practitioner, but it shows plainly what the effects on medical practice are of a socialized system of practice such as obtains in Great Britain.

Medicolegal

Evidence: Scientific Tests; Lie Detector.—The defendant was charged with bank robbery. In the course of his trial his counsel offered to prove, by a test on the defendant with an instrument known as a "lie detector," that when the robbery was committed the defendant was not in the city where it occurred and that he was not guilty. The offer described the "lie detector" and claimed that it had been found to give "a continuous quantitative differential blood pressure and pulse curve; that one guilty of a crime becomes disturbed and has distinct emotional disturbances when questioned with reference to the details of a crime which he has committed; that such emotional disturbances are recorded on the 'lie detector' above described; that this 'lie detector' has been used in over 10,000 cases and that seventy-five per cent of those upon whom the 'lie detector' has been used have confessed their guilt upon completion of a second test with the said 'lie detector.'" The trial court refused to admit the proffered evidence and the defendant was convicted. He then appealed to the Supreme Court of Wisconsin, alleging the exclusion of this evidence as error.

On the question raised by this assignment of error, said the Supreme Court, there has been only one reported decision. In *Frye* v. *United States*, 54 App. D. C. 46, 293 F. 1013, 34 A. L. R. 145, the defendant had submitted to a deception test, but the trial court refused to allow the scientist who made the test as an expert to testify as to the results. In that case the Court of Appeals of the District of Columbia said:

> Just when a scientific principle or discovery crosses the line between the experimental and demonstrable stages is difficult to define. Somewhere in this twilight zone the evidential force of the principle must be recognized, and while courts will go a long way in admitting expert testimony deduced from a well recognized scientific principle or discovery, the thing from which the deduction is made must be sufficiently established to have gained general acceptance in the particular field in which it belongs.
>
> We think the systolic blood pressure deception test has not yet gained such standing and scientific recognition among physiological and psychological authorities as would justify the courts in admitting expert testimony deduced from the discovery, development, and experiments thus far made.

The Supreme Court of Wisconsin was not satisfied that during the ten years that had elapsed since the above cited decision was rendered the lie detector had progressed from the experimental to the demonstrable stage. The court quoted Dean Wigmore's Principles of Judicial Proof (ed. 2) 1931:

> Looking back at the range of possibilities for experimental psychometrie methods of ascertaining concrete data for valuing testimonial evidence, it will be seen that thus far the only new psychometric method that has demonstrated any utility is the blood pressure method, which detects lies; . . . the record of psychometric achievement with testimony is still meager. . . . The conditions required for truly scientific observation and experiment are seldom practicable. The testimonial mental processes are so complex and variable that millions of instances must be studied before safe generalizations can be made.

Dean Wigmore's statement, said the court, seems to offer little comfort to one who contends that the lie detector is past the experimental stage. It may have some utility now and may ultimately be of great value in the administration of justice, but a too hasty acceptance of it may bring complications and abuses that will overbalance whatever utility it may be assumed to have. The present necessity for elaborate exposition of its theory and demonstration of its practical working, in order to convince the jury of its probative tendencies, together with the possibility of attacks on the soundness of its underlying theory and its practical usefulness, may easily result in a trial of the lie detector rather than the issues in the cause. Moreover, if the defendant in a criminal case is to be permitted to have tests taken outside of court and then to produce expert testimony as to the results of the tests when these are favorable to him, without the necessity of taking the stand or submitting to tests by the prosecution, the way would seem to be open to abuses that would not promote the cause of justice. The Supreme Court of Wisconsin therefore concluded that the refusal of the trial court to admit the testimony was not error and affirmed the judgment of conviction.—*State v. Bohner (Wis.), 246 N. W. 314.*

Malpractice: Criteria of Competence of Physicians in Rural and in Urban Communities.—The defendant, an exodontist of Louisville, Ky., extracted one of the plaintiff's teeth. An infection set in, and, attributing it to the neglect and unskilfulness of the defendant, the plaintiff sued. The lower court gave judgment for the defendant, whereupon the plaintiff appealed to the Court of Appeals of Kentucky. It was contended that the trial court erred in instructing the jury that the term "ordinary care and skill" mean such care and skill as are generally employed by ordinarily careful and skilful exodontists "*in the community of Louisville*," under like or similar circumstances. A similar instruction, said the court, was condemned in *Burk* v. *Foster*, 114 Ky. 20, 69 S. W. 1096, when the court said:

> We think the sounder rule is, not that the physician's skill and degree of attention should be measured by those of his community, but by such as is exercised generally by physicians of ordinary care and skill in similar communities.

In reaching that conclusion in the Burk case, however, the court continued, a premise was that the operation was performed by a local physician *in a small village*, where there were insufficient comparative standards by which to measure the degree of skill. There is no disposition now to depart from that rule when the conditions or the locality are similar to those involved in that case. But the question here is whether the same rule should apply in a city of some 350,000 inhabitants, where there are many skilful practitioners of the profession. The court was unable to regard as error the instruction which required the defendant to exercise such care and skill as were generally employed by ordinarily careful and skilful practitioners of the same class "in the community of Louisville."

The judgment of the trial court for the defendant was affirmed.—*Tanner v. Sanders (Ky.), 56 S. W. (2d) 718.*

Evidence: Mortality Tables Admissible; Disclosure of Employment of Witness by Defendant's Insurer Compellable.—In an action for damages for personal injuries, in which the evidence shows that the injuries to the plaintiff are permanent, it is not error for the trial court to receive tables of life expectancy in evidence. If the defendant carries liability insurance and the physician called as an expert witness by him is employed by the defendant's insurance company, it is proper for the trial court to permit such facts to be elicited from the physician on cross-examination, since this fact would tend to affect the weight of his testimony.—*Lyons v. Joseph (Neb.), 246 N. W. 859.*

Society Proceedings

COMING MEETINGS

American Society of Tropical Medicine, Richmond, Va., Nov. 15-17. Dr. Henry E. Meleney, Vanderbilt University School of Medicine, Nashville, Tenn., Secretary.

Association of American Medical Colleges, Minneapolis, Oct. 30-Nov. 1. Dr. Fred C. Zapffe, 5 South Wabash Avenue, Chicago, Secretary.

Central Society for Clinical Research, Chicago, Oct. 27. Dr. Lawrence D. Thompson, 903 University Club Building, St. Louis, Secretary.

Medical and Surgical Association of the Southwest, El Paso, Texas, Dec. 7-9. Dr. W. Warner Watkins, Box 1587, Phoenix, Ariz., Secretary.

Oregon State Medical Society, Portland, Oct. 26-28. Dr. Albert W. Holman, 364 Washington Street, Portland, Secretary.

Southern Medical Association, Richmond, Va., November 14-17. Mr. C. P. Loranz, Empire Building, Birmingham, Ala., Secretary.

Southern Surgical Association, Hot Springs, Va., Dec. 12-14. Dr. Robert L. Payne, 142 York Street, Norfolk, Va.

Virginia, Medical Society of, Lynchburg, Oct. 24-26. Miss Agnes V. Edwards, 1209 East Clay Street, Richmond, Secretary.

Western Surgical Association, Cincinnati, Dec. 8-9. Dr. Frank R. Teachenor, 306 East 12th Street, Kansas City, Mo., Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Physiology, Baltimore

105: 1-250 (July 1) 1933

Influence of Desiccated Thyroid Gland, Thyroxine and Inorganic Iodine, on Storage of Glycogen in Liver of Albino Rat Under Controlled Conditions. H. C. Coggeshall and J. A. Greene, Indianapolis.—p. 103.
Relationship of Adrenal and Thyroid Glands to Excised Muscle Metabolism. J. E. Davis and A. B. Hastings, Chicago.—p. 110.
Reflex Reversal and Interaction of Allied Vestibular Reflexes. R. Lorente de Nó, St. Louis.—p. 122.
Study of Blood Volume Regulation and Blood Composition in Experimental Hydremia: I. Regulation of Blood Volume. D. B. Calvin, A. H. Smith and L. B. Mendell, New Haven, Conn., and Columbia, Mo.—p. 135.
Studies in Physiology of Vitamins: XXII. Effect of Experimentally Induced Hyperthyroidism on Vitamin B Requirement of Pigeons. C. R. Cowgill and M. L. Palmieri, New Haven, Conn.—p. 146.
Fundamental Chemical Changes in Contracting Mammalian Muscle. J. Sacks and Wilma C. Sacks, Ann Arbor, Mich.—p. 151.
Studies on Cerebral Cortex: II. Localized Representation of Hopping and Placing Reactions in the Rat. C. M. Brooks, Boston.—p. 162.
Effects of Theelin and Theelol in Latent Tetany. F. Mathieu and B. O. Barnes, Chicago.—p. 172.
Diurnal Cycle in the Liver of the White Rat: II. Food, a Factor in Its Determination. G. M. Higgins, J. Berkson and Eunice Flock, Rochester, Minn.—p. 177.
Absorption of Glucose by Chronic Loops of Colon. G. E. Burget, P. H. Moore and R. W. Lloyd, Portland, Ore.—p. 187.
Preparation, Identification and Assay of Prolactin: A Hormone of the Anterior Pituitary. O. Riddle, R. W. Bates and S. W. Dykshorn, Cold Spring Harbor, Long Island, N. Y.—p. 191.
*The "Basal Level" of the White Cell Count in Man. Malvina Schweizer, New York.—p. 217.
Mode of Action of Secretagogues (Liver Extract) in Promoting Gastric Secretion. M. S. Kim and A. C. Ivy, Chicago.—p. 220.
Effect of Amniotin on Basal Metabolism of Rats and Rabbits. T. C. Sherwood, M. Savage and J. F. Hall, Lexington, Ky.—p. 241.
Carbohydrate Metabolism of Heart During Ventricular Fibrillation. D. R. Hooker and N. D. Kebar, Baltimore.—p. 246.

"Basal Level" of White Cell Count.—Schweizer made white cell counts on fifty subjects while at rest and during mild activity. She has not confirmed the existence of a "basal level" as described by Garrey. Of the fifty subjects, twenty-six showed no significant difference in the two counts, while ten showed an increase and fourteen a decrease in activity. The white cell counts taken on subjects before rising did not all fall into the range between 5,000 and 7,000; in fact, counts as low as 4,700 and as high as 11,500 were found. Similarly, during activity the counts were found to range from 3,500 to 11,500.

Delaware State Medical Journal, Wilmington

5: 129-150 (June) 1933

Vaginal Hysterectomy. W. F. Preston, Wilmington.—p. 129.
A Few of the Less Common Complications in Surgery. J. C. Pierson, Wilmington.—p. 133.
*Why Potassium Iodide Should Not Be Used in Treatment of Tuberculosis. C. C. Fooks, Frankford.—p. 137.

Potassium Iodide and Tuberculosis.—Fooks states that the tuberculous process in the lungs is the deposition of lime salts about the necrotic area. Tricalcium phosphate is the material that walls off and seals up the diseased area. When potassium iodide is administered, it ionizes into positive potassium and negative iodine. Iodine is a powerful oxidizing agent, and the water present, which also ionizes into positive hydrogen and negative hydroxide ions, is caused to liberate negative oxygen ions, which, acting on the insoluble tricalcium phosphate barrier, cause it to break down into the soluble calcium hydrogen phosphate and the soluble calcium hydroxide, thereby allowing the necrotic and caseous process to spread, and increasing the chances of a break and of a consequent hemorrhage.

Journal of Bacteriology, Baltimore

25: 545-654 (June) 1933

Bacterial Variation (Abstracts of Certain Papers Presented Before Society of American Bacteriologists at Ann Arbor, Dec. 28, 1932): Observations on Amorphous Phases of Bacteria. Jean Broadhurst, New York.—p. 545.
Id.: II. Some Pitfalls in Bacteriology. M. Frobisher, Jr., Baltimore.—p. 565.
Id.: III. Relation of Bacterial Variants of Kuhn to Chief Phases in Microbic Dissociation. P. Hadley, Ann Arbor, Mich.—p. 572.
Id.: IV. Atypical Acid-Fast Organisms: II. Some Observations on Filtration Experiments. M. Pinner, Tucson, Ariz.—p. 576.
Id.: V. Hypothetic View of Bacterial Variation. G. B. Reed, Kingston, Ont., Canada.—p. 580.
Id.: VI. Notes on Life Cycle Phenomena and Filtrability of Tubercle Bacillus. H. C. Sweany, Chicago.—p. 587.
Distinguishing Characteristics of Lactobacillus Acidophilus. H. R. Curran, L. A. Rogers and E. O. Whittier, Washington, D. C.—p. 595.
Studies of Bacterium Coli in Privately Owned Rural Water Supplies. R. L. France, Amherst, Mass.—p. 623.

Journal of Clinical Investigation, New York

12: 505-612 (May) 1933

*Further Studies on Agglutination Reaction in Chronic Arthritis. Edith E. Nicholls and W. J. Stainsby, New York.—p. 505.
Gastro-Intestinal Studies: II. Pancreatic Enzymes in Pernicious Anemia. O. M. Helmer, P. J. Fouts and L. G. Zerfas, Indianapolis.—p. 519.
*Heat Cramps: Clinical and Chemical Study. J. H. Talbott, Boston, and J. Michelsen, Boulder City, Nev.—p. 533.
Studies of Gastric Pepsin: I. Methods of Measurement and Factors Which Influence It. A. E. Osterberg, Frances R. Vanzant and W. C. Alvarez, Rochester, Minn.—p. 551.
Id.: II. Secretion of Pepsin in Cases of Duodenal Ulcer and Pseudo-Ulcer. Frances R. Vanzant, A. E. Osterberg, W. C. Alvarez and A. B. Rivers, Rochester, Minn.—p. 557.
Studies of Urea Excretion: VIII. Effects on Urea Clearance of Changes in Protein and Salt Contents of the Diet. C. L. Cope, New York.—p. 567.
*Thermal Changes in Peripheral Vascular Disease During Sympathetic Ganglionectomy Under General Anesthesia. W. McK. Craig, B. T. Horton and C. Sheard, Rochester, Minn.—p. 573.
Glycolysis in Blood of Patients with Pernicious Anemia. S. M. Goldhamer, Ann Arbor, Mich.—p. 583.
Plasma Protein Changes and Suspension Stability of Blood in Lobar Pneumonia. J. K. Moen and H. A. Reimann, Minneapolis.—p. 589.
Blood in Cases of Unexplained Gastric Anacidity. W. S. Polland, San Francisco.—p. 599.

Agglutination Reaction in Chronic Arthritis.—Nicholls and Stainsby observed that a high proportion of patients with rheumatoid arthritis give positive agglutination reactions to a specific type of hemolytic streptococcus. In patients with advanced joint involvement, higher average titers are obtained than in those with less involvement. The duration of the disease and the age of the patient play unimportant parts in the strength of the agglutination. Following the onset of the disease there is a gradual increase in the agglutination titer, which reaches its maximum in six months, on the average, while following recovery of the patient the agglutinins tend to diminish and eventually to disappear. This reaction of serum in rheumatoid arthritis appears to be a true immunologic response. Other forms of arthritis do not give positive results in agglutination tests with typical strain streptococci.

Heat Cramps.—Talbott and Michelsen give a clinical description of five cases of heat cramps with a chemical study of the blood and urine. If the cause of heat cramps is essentially a loss of salt and water from the body tissues, treatment should provide for their restoration. The most rapid replacement of salt and water is by means of intravenous saline solution. The authors used only sodium chloride. In addition to the saline infusions, an exclusive milk diet was given during the first twenty-four hours. It is possible to prevent cramps by providing a daily supply of salt greater than that lost in the sweat. This amount may be determined by knowing the approximate amount of chloride excreted in a twenty-four hour specimen of urine. Less than 3 Gm. of salt per day in the urine does not provide for a satisfactory margin of safety. Fresh cow's milk has an average salt concentration of about 0.3 per cent, and this provides fluid as well as salt. Salted drinking water (sodium chloride from 0.25 to 1 per cent) has been used successfully in the prevention of heat cramps among soldiers in the United States Army. Barley water and salted beer are used by certain local groups of colliers in England. It is possible that no salt need be taken between meals if the food is liberally salted at meal time. The necessary amount of salt to prevent

cramps is a function of the individual's susceptibility and of the amount lost in the sweat at a given temperature.

Sympathetic Ganglionectomy.—Craig and his associates made continuous observations of surface temperature, before and during sympathetic ganglionectomy, on all four extremities of four subjects with Raynaud's disease and thrombo-angiitis obliterans. General anesthesia alone produced maximal vasodilatation in Raynaud's disease and thrombo-angiitis obliterans. Severance of the sympathetic nerves did not cause additional vasodilatation. In Raynaud's disease a prompt and uniform vasodilating response was observed in the peripheral vessels of all four extremities, but in thrombo-angiitis obliterans uniform response was absent because the occlusive process in the vessels of all four extremities is never the same in thrombo-angiitis obliterans. The graphic records made with anesthesia at the time of operation serve as a check on preoperative studies, carried out with other vasodilating agents. If satisfactory rises in the surface temperature of the involved extremities are not observed after induction of general anesthesia, it is evident that an additional rise will not develop after interruption of the sympathetic innervation. General anesthesia constitutes a satisfactory method for investigating thermal changes in cases of thrombo-angiitis obliterans, Raynaud's disease, vasospastic scleroderma and arthritis, prior to and during sympathetic ganglionectomy. Valuable information may be obtained regarding the amount and extent of vasospasm in the vessels of the extremities, particularly in the collateral circulation of subjects with thrombo-angiitis obliterans, and the method gives accurate information regarding the degree of the occlusive process in this group of cases. Vessels of patients who are refractory to, or react poorly to, other vasodilating agents will usually undergo maximal vasodilatation when general anesthesia is administered.

Journal of Immunology, Baltimore

24: 433-558 (June) 1933

Experimental Study of Antipoliomyelitic Serum from Monkeys Artificially Immunized with Organism Cultivated from Poliomyelitis Nervous Tissue. F. Elberson, with technical assistance of W. G. Mossman, San Francisco.—p. 433.

Usefulness of Blood Grouping in Medicolegal Cases Involving Blood Relationship. A. S. Wiener, Brooklyn.—p. 443.

Comparative Phagocytic Activity of Macrophages and Polymorphonuclear Leukocytes: Essential Similarity of Tropin Action with Respect to Two Types of Phagocyte. B. Lucké, M. Strumia, S. Mudd, M. McCutcheon and Emily B. H. Mudd, Philadelphia.—p. 455.

Effect of Flagellar and Somatic Sensitization of Typhoid Bacillus on Phagocytosis by Macrophages and Polymorphonuclear Leukocytes: Intracellular Digestion. S. Mudd, B. Lucké and M. Strumia, Philadelphia.—p. 493.

Electric Charge of Antibodies. L. Oliteki, Jerusalem.—p. 505.

Effect of Normal and Immune Staphylococcus Rabbit Serums on Action of Staphylococcus Bacteriophage. E. L. Burky, Baltimore.—p. 513.

Individuality of the Red Blood Cells of Inbred Strains of Fowls. A. W. Kozelka, Chicago.—p. 519.

Note on Fractionation of Antimeningococcus Serum. P. P. Murdick and Sophia M. Cohen, Albany, N. Y.—p. 531.

Lipoidal Content of Antipneumococcic Horse Serum. L. D. Felton and Gladys Kauffmann.—p. 543.

Proof of Presence of Agglutinogen "A" in All Erythrocytes of Type AB. W. C. Boyd and M. A. Derow, Boston.—p. 549.

Journal of Pharmacology & Exper. Therap., Baltimore

48: 127-266 (June) 1933

Fate of Glyceryl Trinitrate in the Tolerant and Nontolerant Animal. L. A. Crandall, Jr., Chicago.—p. 127.

*Recovery from Experimental Barbital Poisoning Under Various Types of Fluid Administration. W. E. Gower, Chicago, and J. Van de Erve, Charleston, S. C.—p. 141.

Chemotherapy of Quinoline Compounds: IV. Action of Certain Quinoline Compounds on Paramoecia. P. Brahmachari, R. Banerjea and U. Brahmachari, Calcutta, India.—p. 149.

Comparative Potency of Some Digitalis Specialties According to Pigeon Method. A. J. Lehman and P. J. Hanzlik, San Francisco.—p. 151.

Comparative Physiologic Actions of dl-β-Phenylisopropylamines: II. Bronchial Effect. G. A. Alles, Monterey Park, Calif., and M. Prinzmetal, St. Louis.—p. 161.

Some New Alkamines in Tetrahydronaphthalene Series. G. G. Woods and N. B. Eddy, Ann Arbor, Mich.—p. 175.

Studies of Phenanthrene Derivatives: I. Comparison of Phenanthrene and Some 2-, 3-, and 9-Monosubstitution Products. N. B. Eddy, Ann Arbor, Mich.—p. 183.

Study of Cause of Death in Experimental Nicotine Poisoning in Dogs. F. E. Franke, St. Louis, and J. E. Thomas, Philadelphia.—p. 199.

Heat Regulation and Water Exchange: XIV. Liver Edema in Mechanism of Fever Produced by Beta-Tetrahydronaphthylamine and by Anaphylaxis. H. T. Marshall, Louisville, Ky., and H. G. Barbour, New Haven, Conn.—p. 209.

Id.: XV. Water Content of Rat Liver in Shiga Vaccine Fever and Amidopyrine Antipyresis. M. K. Horwitt, H. Sherman and H. G. Barbour, New Haven, Conn.—p. 217.

Intracisternal Minimum Lethal Dose of Procaine Hydrochloride (Novocain) in Dogs. F. W. Co-Tui, New York.—p. 223.

Effect of Different Narcotics and Narcotic Combinations on Minimum Lethal Dose of Procaine Hydrochloride Intracisternally. F. W. Co-Tui, New York.—p. 229.

Observations on Influence of Certain Drugs on Edema of Paraphenylenediamine. M. B. Cohen, P. Wasserman and J. A. Rudolph, Cleveland.—p. 235.

Influence of Oxygen Tension on Reversal of Proteolysis (Protein Synthesis) in Certain Malignant Tumors and Normal Tissues. C. Voegtlin, Mary E. Maver and J. M. Johnson, Washington, D. C.—p. 241.

Recovery from Barbital Poisoning.—According to the experiments of Gower and Van de Erve, diuresis hastens recovery from barbital poisoning. Its importance in the therapy of poisoning by other members of the barbituric acid series is not established. For the optimal rate of recovery from barbital poisoning the diuresis should be adequate in amount without overtaxing cardiac and renal function and should be maintained hour by hour through the recovery period. The authors discuss several types of diuresis. The use of picrotoxin as an antidote for the acute depression of barbital does not preclude the importance or value of diuresis.

Kansas Medical Society Journal, Topeka

34: 203-246 (June) 1933

President's Message: Financial Angle of the Medical Profession. J. D. Colt, Sr., Manhattan.—p. 203.

Sterility in the Female. J. D. Clark, Wichita.—p. 207.

Infectious Mononucleosis (Glandular Fever): Report of Cases. R. I. Canuteson, Lawrence.—p. 212.

*Flavobacterium Orchitidis. N. P. Sherwood, Lawrence.—p. 220.

Huntington's Chorea. Florence P. Chapman, Topeka.—p. 220.

Flavobacterium Orchitidis.—Sherwood isolated a new organism from the spinal fluid in a treated case of meningitis. It was apparently in pure culture and extensively phagocytized. Bergy has suggested that it be called Flavobacterium orchitidis. Its relationship to Flavobacterium whitmori is being investigated. The organism presented short rods with rounded ends showing bipolar staining, occurring singly and in short chains. They were motile, gram negative and capsulated and did not produce spores. A gelatin stab formed rapid crateriform liquefaction. The agar colonies were circular, slightly raised, thick and opaque, were slightly brown in seventy-two hours, and showed a somewhat irregular margin. The glycerin agar slant was thick, mucoid and cream colored. The broth was turbid with a pellicle. There was coagulation with acid production and peptonization in the litmus milk culture. Growth was vigorous on potato medium, which was slightly brown in seventy-two hours. Indole was not formed, nitrates were reduced, blood serum was liquefied, and hydrogen sulphide was not produced. Growth on blood agar plates showed hemolysis and methemoglobin. Acid was produced in dextrose, lactose, maltose, sucrose and mannitol. The organism is quite virulent for guinea-pigs and rabbits. Males develop acute orchitis following intravenous inoculation. There is considerable evidence suggesting that a soluble toxin is produced. Focal lesions in the liver, spleen and lungs are also produced.

Laryngoscope, St. Louis

43: 435-518 (June) 1933

Remarks on Vestibular Tests: Record of Vestibular Findings in a Group of Mixed Neurologic Cases. B. H. Shuster, Philadelphia.—p. 435.

*Palm and Fork Test in Differential Diagnosis Between Conductive and Perceptive Deafness, a Reversal of Bing's Finger and Fork Test. B. M. Becker, Brooklyn.—p. 456.

External Otitis with False Membranes, Apparently of Diphtheria Origin: Case. P. Panneton, Montreal, Canada.—p. 463.

Intracranial Complications of Otitic Origin in Sclerotic Mastoid Without Middle Ear Suppuration: Case Report. L. Usen, Brooklyn.—p. 467.

Practical Points in Otology of Special Interest to Pediatricians and General Internists. W. Hewson, Philadelphia.—p. 473.

Atresia of Choanae: Its Incidence and Cause. J. P. Schaeffer, Philadelphia.—p. 480.

Nasal Sinuses: Practical Considerations of General Interest. H. M. Goodyear, Cincinnati.—p. 482.

Adenoma of Pituitary, Producing Headache of a Type Caused by Sinus Disease: Report of Case. H. B. Cohen, Philadelphia.—p. 496.

Postoperative Pulmonary Complications: Are They Preventable? C. Jackson, Philadelphia.—p. 499.

Carcinoma in Lung Abscess Cavity. J. D. Kernan and A. J. Cracovaner, New York.—p. 501.

New Headlight. D. R. Gaskin, Phoenix, Ariz.—p. 504.

Palm and Fork Test.—Becker describes the palm test for deafness, which consists in pressing the palm of the hand over the ear to be tested while a vibrating tuning fork is applied to the opposite mastoid. On comparing the prolonged bone conduction produced by tympanic disease, finger and palm obturations, it will be observed that the palm obturation almost invariably exceeds that of the others, both in the duration and the intensity. In bilateral normal hearing, when a vibrating tuning fork is put on the vertex and one ear is occluded with a finger, the sound will become localized in the obstructed ear. In a case of unilateral conductive deafness, when the handle of a vibrating fork is set on the vertex, the sound will lateralize faintly or strongly, depending on the degree of the involvement of the tympanic structures in the deafened ear.

Military Surgeon, Washington, D. C.

73: 421-476 (June) 1933

Typhus and Rocky Mountain Spotted Fever in the United States. R. E. Dyer.—p. 421.
The Kahn Test in the United States Army. S. C. Schwartz.—p. 440.
Puncture of Cisterna Magna. R. E. Elvins.—p. 452.

Missouri State Medical Assn. Journal, St. Louis

30: 229-262 (June) 1933

Cardiac Care Other Than Rest and Digitalis. G. Asher, Kansas City.—p. 229.
Transurethral Prostatic Resection in Retrospect. C. K. Smith, Kansas City.—p. 234.
Leukopenia. A. H. Wells, Kansas City.—p. 237.
Ocular Crisis: Report of Two Cases. C. T. Eber, St. Louis.—p. 241.
Torsion of Spermatic Cord. H. B. Goodrich, Hannibal.—p. 242.
New Elastic Breast Binder for Support or Compression. O. S. Krebs, S. D. Soule and Hilda C. Crosby, St. Louis.—p. 245.
New Electrical Bassinet Warmer. P. S. Astrowe, Kansas City.—p. 247.
Unusually Large Strangulated Abdominal Hernia: Operation Under Unfavorable Conditions: Complete Recovery. F. J. Smith, St. Louis.—p. 248.
Myxedema with Hypertension Improved with Thyroid Medication. L. G. Livingston, Cordell, Okla.—p. 249.

New England Journal of Medicine, Boston

208: 1285-1336 (June 22) 1933

General Aspects of Treatment of Chronic Arthritis. G. R. Minot, Boston.—p. 1285.
Intrahepatic Cholelithiasis. M. F. Fallon, Worcester, Mass.—p. 1291.
Recurrent or Intermittent Jaundice in Youth. W. E. Hartshorn, New Haven, Conn.—p. 1294.
Massachusetts Medical Society: The President's Address. H. G. Stetson, Greenfield, Mass.—p. 1300.
*Arteriosclerosis and Diabetes Mellitus. E. R. Lehnherr, Boston.—p. 1307.
What Are Death Rates in Massachusetts Doing? G. H. Bigelow and Angeline D. Hamblen, Boston.—p. 1313.

208: 1337-1388 (June 29) 1933

The Trend of Medicine in the Twentieth Century. C. Frothingham, Jamaica Plain, Mass.—p. 1337.
Rôle of Allergy in Arthritis. F. M. Rackemann, Boston.—p. 1347.
Our Later Heritage. H. Q. Gallupe, Waltham, Mass.—p. 1352.
Clinical Study of Aerophagia. J. Friedenwald and S. Morrison, Baltimore.—p. 1360.
Chaucer and Matters Medical. N. W. Bolduan, New York.—p. 1365.
Progress in Anesthesia in 1932. R. F. Sheldon, Boston.—p. 1369.

Arteriosclerosis and Diabetes Mellitus. — Lehnherr reports the chemical analyses for the lipids, calcium and phosphorus content of twenty-five nondiabetic adult aortas, twenty-five diabetic adult aortas and six nondiabetic children's aortas. The process of atheromatosis is accompanied by definite changes in the lipid deposit, lipid allocation and calcium and phosphorus deposition, which are similar in the diabetic and the nondiabetic aortas. The diabetic aortas differ from the nondiabetic aortas in having exaggerated lipid changes and more calcification. The aortas from the diabetic patients of middle and later life show lipid changes and increased calcium and phosphorus deposition comparable with nondiabetic aortas of an older age. The diabetic aortas show more marked calcium and phosphorus deposition than nondiabetic aortas with similar cholesterol deposits. The duration of the diabetes in the adult patients had no definite relationship with the chemical observations in the aortas. Severe diabetes of two years' duration in a child was associated with greater lipid but less calcium and phosphorus deposition in the aorta than was found in an aorta from a diabetic child having had uncontrolled diabetes of eight years' duration.

New Jersey Medical Society Journal, Orange

30: 371-418 (May) 1933

The General Practitioner, His Responsibilities and Problems. J. C. McCoy, Paterson.—p. 371.
Ten Years with the Maternal Welfare Commission of Essex County. W. B. Mount, Montclair.—p. 377.

30: 419-470 (June) 1933

Some Surgical Considerations in Repair of Obstetric Trauma. J. R. O'Sullivan, Jersey City, and B. A. O'Connor, Kearny.—p. 419.
Electrocardiograms of Mental Patients: II. Further Report on Total of Patients. L. Levin, Trenton.—p. 424.
Some Trends in Modern Medicine. J. Schapiro, New York.—p. 427.
Toxic Hepatitis (Acute Yellow Atrophy) Due to Cinchophen (Atophan). L. L. Perkel, Jersey City.—p. 429.
Peptic Ulcer. F. Pearlstein, West New York.—p. 433.
Effects of Tobacco on Adolescents. W. B. Stewart, Atlantic City.—p. 436.
Problems Confronting Plastic Surgery. J. W. Maliniak, Newark.—p. 439.
Retroperitoneal or Postperitoneal Dermoid Cyst. J. C. Spallone, Newark.—p. 442.
Application of Boltz Test to Urine. R. A. Kilduffe, Edna D. Wilson and Hilda Bernstein, Atlantic City.—p. 443.
Treatment of Repeated Stillbirths and Miscarriages. A. W. Bingham, East Orange.—p. 444.

New Orleans Medical and Surgical Journal

85: 879-958 (June) 1933

Memorial Oration: Louisiana State Medical Society. J. Q. Graves, Monroe, La.—p. 879.
Little Things in Which Cancer May Develop and Importance of Discovering Them Early So That Cancer May Be Prevented or Easily Cured. J. C. Bloodgood, Baltimore.—p. 884.
Some Interesting Observations on Goiter. A. Eustis, New Orleans.—p. 892.
Resection of Cervical Portion of Esophagus and Larynx for Carcinoma: Report of Case. H. R. Mahorner, New Orleans.—p. 898.
Fractures of Mandible and Their Treatment. J. P. Wahl, New Orleans.—p. 900.
Modern Treatment of Asthma. B. G. Efron, New Orleans.—p. 906.
Leukocyte Count in Rabbits After Injection of an Organism Isolated from a Case of Granulocytopenia. W. A. Sodeman, New Orleans.—p. 909.

86: 1-76 (July) 1933

The Community Hospital. J. M. Acker, Jr., Aberdeen, Miss.—p. 1.
A Louisiana Decree of 1770 Relative to the Practice of Medicine and Surgery. D. C. McMurtrie, Chicago.—p. 7.
Diagnostic Difficulties of Digestive Disturbances. J. E. Knighton, Shreveport.—p. 11.
*Peptic Ulcer: Pitkin Treatment. R. M. Stephenson, Lexington, Miss.—p. 14.
Just an Appendix. I. Cohn, New Orleans.—p. 16.
Treatment of Amebic Abscess of Liver by Aspiration. M. D. Hargrove, Shreveport.—p. 21.
Mumps Encephalitis: Report of Case with Bilateral Optic Neuritis, Rapid and Complete Blindness and Complete Recovery. R. C. Young, Shreveport.—p. 25.
Anhydremia: Its Mechanism and Treatment. R. Kapsinow, Lafayette.—p. 33.

Peptic Ulcer.—Stephenson treated thirty-six cases of peptic ulcer by the intravenous synergistic method of Pitkin; that is, with a preparation composed of lipins, lipoids, emetine and a protein. The author believes that the intravenous administration of 6 cc. of the preparation, every third day for three doses, will render every patient with peptic ulcer symptom free, provided the diet is confined to fresh or malted milk, cream, buttermilk, soft-boiled or raw eggs, broths and soups, cereals, starch, rice and bread puddings, baked or mashed potatoes, plain ice cream, ices and sponge cake. Coffee, tea and alcoholic beverages are prohibited. After the sixth dose, baked, broiled or boiled fresh fish and chicken (white meat), peas, squash, spinach, mashed carrots, asparagus, fruit juices and stewed fruits (except berries) may be added. After the fifth week, all dietary restrictions are dismissed with the exception of alcoholic beverages and preserved meats or fish. It is preferable to give the injection when the stomach is empty, as the reaction is almost immediate and, if it is given after meals, vomiting may occur. In the milder cases there is freedom from pain after the first injection. Six injections at intervals of three to four days usually suffice in the milder cases. Patients who have suffered for a long time with marked gastric or duodenal lesions may require eight doses, the subsequent doses being given a week apart. The maximal number of injections for one course is ten. If a second course of treatment is required, from six to eight weeks should intervene. The solution may be injected into the muscles

of the arms or the buttocks, if intravenous injection is contraindicated. In hemorrhagic cases the injection is repeated every second day.

New York State Journal of Medicine, New York

33: 673-722 (June 1) 1933

Appendicitis: General Survey and Statistics. T. Wright, Buffalo.—p. 673.
Diagnosis of Appendicitis. E. P. Lothrop, Buffalo.—p. 675.
Chronic Appendicitis? G. R. Critchlow, Buffalo.—p. 677.
Complications of Appendicitis: Immediate and Remote. M. A. Sullivan, Lackawanna.—p. 679.
Scarlet Fever Control. F. W. Laidlaw, Middletown.—p. 684.
Lichenoid Sarcoid (Boeck): Report of Case with Review of Literature. J. L. Morse, New York.—p. 686.
Summary of Physiology of Female Reproductive System: Some Clinical Observations. N. P. Sears, Syracuse.—p. 690.
Structural Changes of Aorta Due to Arteriosclerosis, as Observed Roentgenologically. W. W. Fray and J. H. Green, Rochester.—p. 694.
Two Series of Cases of Food Poisoning. L. H. Cotter, New York.—p. 698.
Arrested Shoulders in Vertex Presentation. M. Hornstein, New York.—p. 700.

33: 723-790 (June 15) 1933

Academic and Industrial Research in the Field of Therapeutics. H. H. Dale, London, England.—p. 723.
Significance and Detection of Tuberculosis in School Children. W. J. Ryan, Pomona.—p. 729.
Tuberculin Tests in Children: Comparative Studies with Different Makes of Tuberculin. H. A. Reisman, Jamaica.—p. 734.
Unresolved Pneumonia. H. J. Harris, Westport.—p. 738.
*Simple Procedure for Cure of Rhinophyma. J. J. Eller, New York.—p. 741.
Group Study in Hay Fever. H. S. Berkoff, New York.—p. 743.
Acne Vulgaris: Review of Two Hundred Cases, with Reference to Classification and Treatment. A. R. McFarland, Rochester.—p. 747.
Tularemia in Which No Local Lesion Developed at Site of Injury: Case. E. R. Maillard, Albany.—p. 751.
Trichiniasis, with Recovery. M. D. Kenler and J. J. Silverman, Tompkinsville, Staten Island.—p. 752.
Evaluation of Arsphenamines for General Use, with Especial Reference to Sulpharsphenamine. E. D. Osborne, R. J. Rickloff and M. G. Butler, Buffalo.—p. 753.
Avian Tuberculosis of Skin: Notes. R. H. Rulison, New York.—p. 757.

Operation for Rhinophyma.—Eller reports four cases of rhinophyma in which he obtained good cosmetic results by a relatively simple procedure. The superfluous tissue was pared off under local anesthesia until the nose was shapely. Later, when the skin had grown over the denuded areas, it was treated by applications of x-rays, trichloracetic acid or phenol. Each patient regained a shapely nose without conspicuous scars.

Northwest Medicine, Seattle

32: 217-264 (June) 1933

Present Status of Food Allergy. A. H. Rowe, San Francisco.—p. 217.
Value of Skin Testing, as Aid in Diagnosis of Allergic Diseases. M. W. Moore, Portland, Ore.—p. 224.
Transurethral Treatment of Prostatic Hypertrophy. H. C. Bumpus, Jr., Rochester, Minn.—p. 227.
Transurethral Prostatic Resection. C. F. Engels, Tacoma, Wash.—p. 232.
Observations on Sinus Surgery, with Especial Reference to External Ethmosphenoidectomy. G. E. Griffith and E. D. Warren, Tacoma, Wash.—p. 236.
Lipiodol in Diagnosis of Maxillary Sinus Conditions. I. A. Drues, Tacoma, Wash.—p. 242.
Nasal and Accessory Sinus Disease as a Manifestation of Systemic Disorders. W. W. Bamm, Salem, Ore.—p. 245.
Idiopathic Epilepsy: Some Etiologic Factors. L. D. Inskeep, Medford, Ore.—p. 248.

Ohio State Medical Journal, Columbus

29: 337-400 (June 1) 1933

Transurethral Resection of Prostate: Conservative Procedure. W. E. Lower and W. J. Engel, Cleveland.—p. 357.
*Hay Fever Treatment: Continuous Method. K. D. Figley, Toledo.—p. 360.
Cervical Lymphadenopathy. B. K. Wiseman, Columbus.—p. 364.
Determination of Visual Acuity. P. G. Moore, Cleveland.—p. 367.

Hay Fever Treatment.—Figley believes that the advantages of the continuous method of treatment in hay fever are that: 1. After the protective dose is once reached, the number of office visits required is lessened appreciably. 2. Treatment is less likely to be interrupted by illness or vacations. 3. Treatment may be started any time. 4. After monthly treatments have been sufficiently established, results are invariably better than by the interrupted method. 5. There is good reason to believe that a clinical cure can be accomplished in much shorter time than by the interrupted or seasonal method. One other beneficial feature of this method is that patients are kept under observation frequently enough and long enough for other manifestations of allergy to be recognized and corrected. Many hay fever patients have other allergic manifestations, particularly food sensitizations, such as eczema, migraine or colitis. In the author's series of 125 cases treated continuously for two years or more, twelve (10 per cent) have attained a clinical cure. Not one of them has had any symptoms for the past two years and in all the skin tests to their specific causative pollens are negative. Most of these were cases of average sensitivity in which considerable immunity had been acquired before treatment was begun.

29: 401-456 (July 1) 1933

*Therapeutic Values of Scarlet Fever Antitoxin. F. E. Stevenson, M. V. Veldee and A. G. Mitchell, Cincinnati.—p. 421.
Radiologic Study of Abdominal Tumors and Their Differentiation. S. Brown, Cincinnati.—p. 424.
Familial Hemolytic Jaundice: Clinical Study of Case Before and After Splenectomy. D. M. Glover and W. C. Fargo, Cleveland.—p. 428.
Practical Consideration of Sphenoidal Sinus Infection. H. H. Vail, Cincinnati.—p. 432.
Adult Health Education. R. Lockhart, Cleveland.—p. 436.
*Treatment of Undulant Fever in Man with Detoxified Vaccine and with Antiserum: Preliminary Note. A. E. O'Neil, Cincinnati.—p. 438.

Scarlet Fever Antitoxin.—Stevenson and his associates observed the therapeutic effects of scarlet fever antitoxin in eighty-four controls, seventy-four patients treated with antitoxin A and thirty-eight treated with antitoxin B. The duration of the period of eruption in the combined groups treated with antitoxin was 4.4 days, as against 6.8 days in the control group. The antitoxin had no apparent influence on the duration of the interval before desquamation began, nor did it have a pronounced influence on the desquamation period. There was a definite tendency for the desquamation to be localized and mild in character in the serum treated patients, but to be generalized and marked in the controls. An analysis of the temperature records failed to reveal any definite febrile reduction following an administration of antitoxin. Excluding serum sickness, there were 75 per cent fewer major complications (cervical adenitis, otitis media, mastoiditis, nephritis and toxic arthritis) in the serum treated than in the control group. Of the serum treated patients, 66.3 per cent developed serum sickness of varying degrees of severity. A previous injection of serum seemed to be the most important predisposing cause of serum sickness. Of the patients who had received a previous injection of horse serum in any form, 87.2 per cent developed serum sickness, and of those who had previously received serum only in the form of diphtheria toxin-antitoxin, 85.3 per cent developed serum sickness. In the group of patients who had received no previous injection of serum, 40.8 per cent developed serum sickness. In this group the incidence of serum sickness seemed to be directly influenced by the volume of serum injected, since 66.7 per cent of the patients receiving 20 cc. of serum (antitoxin A) and 16 per cent of those receiving 8 cc. of serum (antitoxin B) developed serum complications.

Undulant Fever Treated with Detoxified Vaccine.—O'Neil treated five cases of undulant fever with detoxified Alcaligenes abortus vaccine. In every instance clinical improvement exactly paralleled desensitization to the bacterial protein. None of the patients have had remissions within a maximum period of two years after infection. Goats immunized with nitrous acid treated vaccine yielded a serum which was used to treat three patients. One patient was treated with human hyperimmune serum. In all instances the serum treatment brought about a drop in temperature to normal, and a considerable reduction in hypersensitivity was shown by the skin test. The author believes that this report is justified in view of the fundamental immunologic responses seen in the management of these cases.

Philippine Islands Med. Association Journal, Manila

13: 277-326 (June) 1933

Malaria Prophylaxis and Mosquito Control. P. F. Russell, Manila.—p. 277.
Medical Service in Industry. P. I. de Jesus, Manila.—p. 289.

Public Health Reports, Washington, D. C.

48: 677-702 (June 16) 1933

Nonmannitol-Fermenting Type of Streptococcus Enteritidis Producing Clinical Reactions Similar to Those of Rocky Mountain Spotted Fever Virus. L. F. Badger.—p. 677.
Experimental Studies of Natural Purification in Polluted Waters: VII. Selection of Dilution Water for Bacteriologic Examinations. C. T. Butterfield.—p. 681.

48: 703-752 (June 23) 1933

Distribution of Mottled Enamel in the United States. H. T. Dean.—p. 703.
Hydrolysis of Phenyl and Cresyl Phosphoric and Phosphorous Acid Esters in Alcoholic and Aqueous Systems. M. I. Smith and E. F. Stohlman.—p. 734.

48: 753-786 (June 30) 1933

*Pellagra-Preventive Value of Green Cabbage, Collards, Mustard Greens and Kale. G. A. Wheeler and D. J. Hunt.—p. 754.
Relation Between Trypanocidal and Spirocheticidal Activities of Neoarsphenamine: IV. Spirocheticidal Activity as Measured by Sterilizing Efficiency of Neoarsphenamine. T. F. Probey.—p. 758.

Prevention of Pellagra.—Wheeler and Hunt have found that canned green cabbage and canned mustard greens contain the pellagra-preventive factor and that, though not fully adequate in themselves, they may be regarded as quite practicable contributory sources for supplementing otherwise pellagra-producing diets. Canned collards and canned kale are satisfactory pellagra-preventive supplements, at least when used in relatively large proportion.

Radiology, St. Paul

20: 417-504 (June) 1933

Scope of Activity of Roentgenologic Physician. L. G. Cole, New York.—p. 417.
Experience in Irradiating all Types of Bone Tumors. M. Kahn, Baltimore.—p. 428.
Report of Over a Thousand Unselected Cancer Cases, Treated in 1931-1932, at New York City Cancer Institute, Welfare Island. I. I. Kaplan, New York.—p. 433.
Therapeutic Fever Produced by Diathermy: Its Present Developments and Future Possibilities. J. C. King, Memphis, Tenn.—p. 449.
Study of Changes in Definition Occurring with Bucky Diaphragm of Mobile Type: New Device for Correcting Chief Defect Resulting from Its Mobile Character. W. W. Fray and W. T. Hill, Rochester, N. Y.—p. 456.
Roentgenologic Differentiation of Lesions of Right and Left Heart. L. G. Rigler, Minneapolis.—p. 463.
Iodized Rapeseed Oil (Campiodol), an Improved Roentgenographic Opaque Oil. M. A. Glaser, Los Angeles, and G. W. Raiziss, Philadelphia.—p. 471.

Southwestern Medicine, Phoenix, Ariz.

17: 179-214 (June) 1933

The Doctor and the Public. H. A. Ingalls, Roswell, N. M.—p. 179.
Genital Hypoplasia in Women. Clara S. Webster, Tucson, Ariz.—p. 180.
Gonorrhea and Its Complications in the Male. J. W. Pennington, Phoenix, Ariz.—p. 187.
Considerations in Treatment of Periarthritis of the Shoulder. J. A. Dickson, Cleveland.—p. 192.
New Experiment: A Point of View of the Report of the Committee on the Costs of Medical Care. R. J. Stroud, Tempe, Ariz.—p. 196.
*Oral Administration of Pollen Extracts, Hay Fever and Asthma Therapy. E. A. Gatterdam, Jr., Phoenix, Ariz.—p. 199.
Public Health Notes. J. R. Earp, Santa Fe, N. M.—p. 202.

Oral Administration of Pollen Extracts.—Gatterdam placed thirteen patients sensitive to the pollen of Bermuda grass on a 3 per cent Bermuda extract made in a phosphate glycerin solution. The dosage was from 15 to 30 drops orally. Nine patients were treated with ash extract. Only one of these took the treatment preseasonally. This patient experienced most gratifying results and did not require any other form of treatment for the relief of asthma. Of the other eight, only one did not receive any relief and one experienced only about 60 per cent relief. The other six obtained from 90 to 95 per cent relief. Thirteen patients suffering from the Franserias (rabbit bush and desert ragweed) took an extract made from these. They all reported from 90 to 100 per cent relief. Of the six who took it seasonally, relief was obtained in all but one. The author concludes that oral administration of pollen extracts has a definite place in hay fever therapy. Preseasonal treatment gives the better results; however, relief may be obtained with seasonal treatment. It is possible to produce a mild gastric or intestinal mucosal reaction, which accounts for the rapid action, similar to that seen with skin-testing reactions. It hardly seems possible that digestion and absorption would be rapid enough. Apparently the gastric juice does not have any detrimental effect on the value of the oral solution.

Texas State Journal of Medicine, Fort Worth

29: 63-172 (June) 1933

Memorial Address. C. M. Grigsby, Dallas.—p. 70.
Blind Men and the Elephant. J. H. Foster, Houston.—p. 72.
Treatment of Congestive Heart Failure and Its Underlying Principles. F. A. Willius, Rochester, Minn.—p. 76.
Some Practical Observations and Deductions on Pathology of the Living: Reiteration and Elaboration. A. C. Broders, Rochester, Minn.—p. 79.

United States Naval Med. Bulletin, Washington, D. C.

31: 241-346 (July) 1933

Severe Head Injuries. L. W. Johnson and T. G. Hays.—p. 241.
*Carboxide Gas: New Insecticidal Fumigant for Bedbugs and Cockroaches. E. W. Brown.—p. 253.
*Acute Pancreatic Necrosis Occurring During General Anesthesia: Report of Three Cases. D. J. Cracovaner.—p. 268.
Selection of Reliable, Safe Mydriatic for Fundus Examination. W. D. Horner.—p. 276.
Joint Training of Army and Navy Medical Reserve. J. R. Hall and R. H. Hunt.—p. 281.
Treatment of Supracondylar Fractures of Humerus. D. S. O'Connor.—p. 285.
Roentgenography of the Nasal Accessory Sinuses: Simple Device Producing Accurate Exposures with Standard Equipment. W. A. Fort.—p. 289.

Carboxide for Fumigation.—Brown conducted tests in a relatively air-tight chamber of approximately 2,000 cubic feet capacity, with the object of determining the minimal lethal dosage of carboxide gas (ethylene oxide) for fumigation. He recommends the following minimum lethal concentrations per thousand cubic feet in a relatively air-tight space: 5 pounds for three hours, 3 pounds for six hours, 3 pounds for twelve hours, 2 pounds for eighteen hours and 2 pounds for twenty-four hours. Carboxide gas is noninflammable and nonexplosive, is noninjurious to fabrics, furniture or food products, is of about one thirty-seventh to one sixtieth of the toxicity of hydrocyanic acid gas for man, and is not prohibitive from the standpoint of cost.

Pancreatic Necrosis.—Cracovaner presents three cases of acute pancreatic necrosis occurring during the administration of a general anesthetic. Only by a careful study of specimens is it possible to determine the anatomic peculiarities that have a physiologic significance and constitute an important factor in the production of this condition. He recommends that particular attention be paid to the comparative size of the pancreatic ducts of Wirsung and Santorini and to the relation of the septum separating the common bile duct and the duct of Wirsung in the ampulla of Vater to the sphincter of Oddi; also that a culture for organisms be made of the bile in the gallbladder. The author suggests the following alternative in those cases in which facilities are not available for a complete anatomic study of these structures, both gross and microscopic: 1. The gallbladder, common and cystic bile ducts, duodenum and pancreas intact should be removed. 2. The pancreas should be cross-sectioned midway between its middle and its tail end. The common pancreatic duct should be injected with methylthionine, chloride U. S. P. (methylene blue) by means of a needle and syringe. The injection should be made with the duct of Wirsung occluded and then with the duct of Santorini occluded. The common bile duct should be injected near its origin. 3. The intact organs should be placed in a 10 per cent solution of formaldehyde and submitted to the Naval Medical School. The author believes that the most dangerous stage of anesthesia for the production of acute pancreatic necrosis is during the second stage of induction and when the patient is regaining consciousness. It is then when reverse peristalsis, retching, vomiting, struggling, and so on are most prevalent.

West Virginia Medical Journal, Charleston

29: 241-292 (June) 1933

President's Annual Address. D. A. MacGregor, Wheeling.—p. 241.
Gastric Syphilis: Present Status of Our Knowledge, Based on Survey of Recent Literature. W. E. Vest, Huntington.—p. 249.
Bilateral Double Kidney with Duplication of Ureters. T. J. McBee, Morgantown.—p. 257.
Chronic Vesiculoprostatitis. T. G. Reed, Charleston.—p. 263.
Use of Spinal Anesthesia in Patients Suffering with Traumatic Conditions of Pelvis or Lower Extremities. O. H. Fulcher, Welch.—p. 267.
Acute Appendicitis. R. Lublin, Hartford, Conn.—p. 269.
Typhoid Fever in West Virginia. W. V. Wilkerson, Montgomery.—p. 270.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

45: 281-332 (July) 1933

*Primary Leukosarcoma of the Skin. W. N. Goldsmith.—p. 281.
*Celery Itch: Dermatitis Due to Celery in Vegetable Canning. S. A. Henry.—p. 301.
*Peculiar Form of Purpura: Clinical Note. A. Piney.—p. 309.
Granulomatous Ulceration Healed by Antimony: Case. J. F. Smith. —p. 311.

Primary Leukosarcoma of the Skin.—Goldsmith describes a case with the general characteristics of Sternberg's leukosarcoma. It differs from classic leukosarcoma in that (1) though the tissue tumors were composed mainly of the usual monocytes, the blood leukocytosis was composed predominantly of small lymphocytes; (2) there were no hemorrhages, and (3) the primary tumor originated in the skin and was unusually malignant. The author states that a review of recent work points to the probability that at least the three conditions known as lymphatic leukosis, leukosarcoma and lymphosarcoma are manifestations of the same disease, and that the variations depend on differences in the individual attacked. He believes that his case with its combination of small lymphocytes and monocytes supports this view. He discusses the nature and origin of the monocytes and puts forward a hypothesis as to the pathologic sequence of events.

Celery Itch.—Henry observed a form of dermatitis confined to the upper limbs and associated with itching in twenty-two workers preparing celery for canning. The dermatitis commenced as an erythematous, vesicular or papular rash. In the majority of cases the attack was not severe, and it was possible for the patient to be transferred to other work while receiving treatment. Nine were cured in one week, six in two weeks, two in three weeks, two in four weeks, and three were not cured until the fifty-third, sixtieth and seventy-eighth day, respectively. The author suggests that the main causative factor is limonene, a hydrocarbon of the terpene series and a constituent of celery oil, water, friction and individual susceptibility playing their respective parts as preparatory causes. The preventive measures adopted consisted of transferring the patient to other work, and the application to the skin, of those not affected, of a suitable oil (pure petrolatum) before commencing work.

Purpura.—Piney encountered an apparently unknown malady in a boy, aged 17, who had been perfectly well until six days before he saw him, when he vomited. Since then he had felt ill and had vomited after any sort of food. His feces were stated to contain blood on the third day of the illness. The day before he was admitted to the hospital a purpuric rash appeared on his hands and feet. On examination, the rash was seen to be dark reddish purple; some vesicles were the size of a pinhead, whereas others were as big as a shilling. Each spot was slightly raised above the surface and was surrounded by a narrow red areola. The temperature was 96 F. and the pulse 120. During the time that the rash was emerging (three weeks), there was a peculiar fecal odor around the patient. The individual spots went through a series of changes, which culminated in the formation of dark purple blebs containing blood-stained fluid. Some of these blebs burst, whereas others disappeared. The fluid obtained by puncturing a bleb was sterile. Two days after admission, the temperature rose to 99.8 F. and during the next three weeks it continued to rise in the evening, although it was almost normal in the morning. The blood showed 6,272,000 red corpuscles per cubic millimeter; hemoglobin, 102 per cent; color index, 0.8; leukocytes, 14,000 per cubic millimeter; neutrophils: band forms 12.3 per cent, polymorphonuclears 49.4 per cent, monocytes 21 per cent, and lymphocytes 17.3 per cent. Class I of the Arneth-Cooke count was 47 per cent, class II, 49 per cent and class III, 4 per cent. The weighted mean was 1.57. The cytoplasm of all the neutrophilic leukocytes showed toxic changes. The temperature began to settle sixteen days after admission to the hospital, but occasional evening rises occurred for the next two weeks. The patient's general condition improved, but albuminuria was noted. No casts or red cells were found in the urine, and the patient felt well. The patient was discharged from the hospital eleven weeks after admission, feeling well but still with a trace of albumin in the urine. No abnormalities were present in the blood at the time of discharge. He was alive and well, with only slight albuminuria, ten months later.

British Journal of Ophthalmology, London

17: 385-448 (July) 1933

Derangement of Corneal Nerves. J. H. Doggart.—p. 385.
Retina in Hemochromatosis. K. Maddox.—p. 393.
Primary Position of Eyes. N. A. Stutterheim.—p. 394.
Automatic Regulation of Heating in Electrical Hot Air Sterilization of Surgical Eye Instruments and Silks for Suture. S. Holth.—p. 402.
Identity of Cataract Formations. J. Foster.—p. 408.
Paralytic Alternating Strabismus of ? Congenital Origin. E. A. Seale. —p. 415.
Conjunctival Band Simulating a Persistent Nictitating Membrane. C. V. Krishnaswami.—p. 417.
New Anterior Synechia Knife. C. V. Krishnaswami.—p. 419.

British Journal of Radiology, London

6: 385-448 (July) 1933

Biologic Response to Gamma Rays of Radium as Function of Intensity of Radiation. F. G. Spear and L. G. Grimmett.—p. 387.
New Fluorescent Screen for Visual Examinations. L. Levy and D. W. West.—p. 404.
Radiography of Urinary Tract. E. J. H. Roth.—p. 411.
Electron Waves. E. T. Jones.—p. 427.

Edinburgh Medical Journal

40: 293-320 (June) 1933

Symptomatology of Diabetes Mellitus: Analysis of One Thousand Seven Hundred Cases. R. M. Murray-Lyon.—p. 293.
Comparison of Wassermann, Kline and Meinicke Tests for Serums. J. D. A. Gray.—p. 305.

International Journal of Psycho-Analysis, London

14: 297-462 (July) 1933

Problem of Duplicated Expression of Psychic Themes. L. Jekels.—p. 300.
Play, Reality and Aggression. M. N. Searl.—p. 310.
New Ways in Psychoanalytic Technic. T. Reik.—p. 321.
Superego in Our Judgments of Sex. F. Wittels.—p. 335.
Jewish Phylacteries and Other Jewish Ritual Observances. M. D. Eder. —p. 341.
Psychoanalytic Aspects of Suicide. K. A. Menninger.—p. 376.

Journal of Laryngology and Otology, Edinburgh

48: 457-524 (July) 1933

Intrathoracic New Growths and Value of Bronchoscopy in Diagnosis and Treatment. V. E. Negus.—p. 457.
Malignant Disease of Oropharynx, Including the Fauces. G. Gordon-Taylor.—p. 463.
Id. N. Patterson.—p. 473.
*Radiologic Treatment of Some Cancers of Oropharynx. J. Maisin, L. Van Den Wildenberg and H. C. Vassiliadis.—p. 479.

Radiologic Treatment of Cancers.—Maisin and his associates point out that it is possible to cure sarcomas of the tonsils and local epithelial cancers of the oropharynx with external irradiations. The glandular metastases of epithelial cancers are more resistant than the primary lesions. For this reason it is advisable to operate when possible and, later, to irradiate the whole region. The percentage of cures is small. The authors' routine treatment for sarcoma of the tonsils consists of 180 or 200 kilovolts, filter of 1 mm. of copper, 40 cm. distance from the skin and 1,500 roentgens on each field. As a rule, they give from 300 to 500 roentgens a day. In epithelial tumors of the oropharynx it is easier to cure the local lesion than the metastases with external radiations. For this reason, when the metastases are operable, it is still preferable to operate by a block dissection of the whole lymphatic system of the neck. It is necessary to dissect both sides, and it is advisable to do this in two stages. Even after a good surgical dissection the whole region should be treated to prevent recurrences. The best two methods of external radiation are telecurietherapy and teleroentgenotherapy or the Coutard method. To get good results with the Coutard method, it is necessary to use hard rays, with the shortest wavelength possible, in order to improve the power of penetration and to increase the selective action on the cancer cells. To obtain such rays one should use at least 200 kilovolts and a filter of 2 mm. of copper. With such a filter all the soft rays are absorbed and the lesions of the skin and of the subcutaneous tissue are reduced. The skin in

such a condition can stand 1,500 and even 2,000 roentgens. The distance between the target and the skin is 60 or 70 cm., and the intensity is no higher than 4 milliamperes. The patient should be irradiated at least two hours a day, 500 roentgens being delivered each day. The whole treatment must have a duration of three weeks or even more. During the last two years, in order to improve their roentgenologic results, the authors have used with some success injections of lipoid extract of the brain, the thymus, the bone marrow and the spleen.

Journal of Physiology, London

79: 1-120 (July 28) 1933

Effect of Gonadectomy on Adrenal, Thyroid and Pituitary Glands. Dorothy H. Andersen and Helen S. Kennedy.—p. 1.
Diffusion of Inorganic Phosphate into and out of Skeletal Muscles and Bones of the Frog. M. Grace Eggleton.—p. 31.
Carotid Sinus Reflexes: Influence of Central Blood Pressure and Blood Supply on Respiratory and Vasomotor Centers. J. J. Bouckaert and C. Heymans.—p. 49.
Action of Veratrine, Curare and Strychnine on Response of Medullated Nerve. H. Fromherz.—p. 67.
Effect of Quaternary Ammonium Salts on Nerve. S. L. Cowan and H. R. Ing.—p. 75.
Reactivity and Activity of Human Uterus at Various Stages of Pregnancy and at Parturition. J. M. Robson.—p. 83.
Choline and Liver Fat in Diabetic Dogs. C. H. Best, C. C. Ferguson and J. M. Hershey.—p. 94.
Reversible Inexcitability of Tactile Endings in Skin Injury. T. P. Feng.—p. 103.
Influence of Temperature on Rate of Excretion of Phenolsulphonephthalein in the Frog. E. M. Scarborough.—p. 109.
Histologic Changes in Bone Responsible for Action of Parathyroid Hormone on Calcium Metabolism of Rat. L. I. Pugsley and H. Selye.—p. 113.
Capacity of Uterus of Rabbit to Respond to Prolonged Luteal Activity. M. K. McPhail.—p. 118.

Journal of Tropical Medicine and Hygiene, London

36: 185-200 (July 1) 1933

The Advisability of Using in Laboratory Work Sugars Tested by Microbiologic Methods. A. Castellani.—p. 185.
Chaulmoogra Oil and Its Derivatives in Treatment of Leprosy. J. W. Tomb.—p. 186.
Some Polynesian Medical Superstitions Encountered in the Cook Islands. S. M. Lambert.—p. 189.

Lancet, London

2: 1-58 (July 1) 1933

Cardiovascular Syphilis. E. N. Chamberlain.—p. 1.
Radiation Treatment of Cancer of Mouth and Pharynx. S. Cade.—p. 4.
Tuberculous Pericardial Effusion: Case. A. Adams and F. S. Hawkins.—p. 12.
*Cavernous Angioma of Maxilla: Fatal Hemorrhage After Teeth Extraction. R. A. Broderick, with notes of similar nonfatal case reported by H. Round.—p. 13.
Idiopathic Steatorrhea of Adults: Record of Two Cases. W. A. Lister.—p. 15.
Observations on Relation Between the Pulmonary Artery and the Esophagus. A. S. Hall.—p. 18.
Evipan: Intravenous Anesthetic. R. Jarman and A. L. Abel.—p. 18.
Congenital Clubfoot: Analysis of Deformity and Principles of Its Treatment. A. L. McGregor.—p. 20.

Cavernous Angioma of Maxilla.—Broderick reports a fatal case of cavernous angioma in the left superior maxilla of a girl, aged 11, in whom on the first examination the left side of the face was enlarged and slightly bluish with a pulsating spot over the malar bone; there were four scars, two over the malar bone, one near the inner canthus of the eye and one over the region of the facial artery. Examination of the mouth revealed a perfect denture containing twenty-eight noncarious well articulating teeth. The left maxilla was slightly expanded and the two premolar and molar teeth were loose, but the gums were firm; when the molar teeth were moved a little blood came from the sockets. On the second examination a month and a half later the teeth were looser. The child lost about 8 ounces of blood on two successive nights. This bleeding was apparently coming from the sockets of the molars. Roentgenograms were taken and models of the mouth obtained. The roentgenograms showed extreme absorption of the roots of the first molar tooth and less of the premolars and second molar. The hemorrhage had been controlled by pressure on the teeth. In view of this the external carotid artery had been tied. After the artery had been ligated it was noticed that the pulsation on the cheek had ceased, and accordingly the wound was closed. When the first upper molar was extracted there was an immediate gush of blood, which was checked with difficulty by a finger in the socket. A cotton plug soaked in phenolized resin and tannic acid was then put in the socket and a temporary splint of Stent's composition held over it. While this was firmly held in position there was no hemorrhage, but on the smallest movement it recommenced. It was then decided to open the wound, dissect out the common carotid and clamp it. This was done, and on removal of the splint and plug only a slight trickle of blood came from the socket; therefore it was decided to ligate the artery. This operation was performed and at the same time a piece of the sternomastoid muscle was cut away to serve as a plug to be stitched into place in the sockets. It was then decided to extract the second molar, plug the sockets with muscle and tightly stitch the wound. The moment the second molar was extracted there was a gush of blood, just as violent as the first. This was controlled with pressure with a finger and, although eventually plugs were fitted into each socket and stitched, the patient's heart and respiration ceased and efforts to restore them were unsuccessful.

Medical Journal of Australia, Sydney

1: 757-784 (June 24) 1933

An Address. F. W. Fay.—p. 757.
Some Experiences in Treatment of Cancer of Uterine Cervix. W. G. Cuscaden.—p. 760.
*Treatment of Head Injuries. A. E. Lee.—p. 762.
Pulmonary Tuberculosis, with Particular Reference to Its Early Aspects. D. R. W. Cowan.—p. 765.
Dissection or Diathermy of Tonsils? E. P. Dark.—p. 771.

2: 1-32 (July 1) 1933

Diabetic Survey. E. Russell.—p. 1.
Spider Bite (Arachnidism): Survey of Its Occurrence in Australia, with Case Histories. W. W. Ingram and A. Musgrave.—p. 10.
Electrosurgery of Tonsils: Some New Technics. A. J. Cahill.—p. 15.

Treatment of Head Injuries.—According to Lee, the first obvious fact in treatment of head injuries is that there is a vast difference in the degree of severity of the injury. The most simple case, in which a patient is admitted to the hospital in the recovery stage of a transitory concussion, needs no special therapeutic measures. Such a patient needs only to be put at rest, both mentally and physically. In the more severely affected patient, whose scalp has been injured and about whom a history of unconsciousness lasting five minutes or more is obtained, the scalp wound should not be sutured in a routine manner in the casualty room. In many cases the wound communicates with a compound fracture of the skull and perhaps with the underlying cerebral structures. Unless bleeding has to be controlled, only a first aid dressing should be applied before the patient is admitted to the hospital. The intelligent care of shock is the first and sole duty of the surgeon after the patient's admission. The application of heat, and possibly the intravenous and subcutaneous administration of saline solution, should be carried out. If a sedative is necessary, morphine should be withheld. When the shock factor is safely combated, the presence of a raised intracranial tension should be determined by a lumbar puncture examination with pressure readings. If an increased pressure is present, lumbar drainage should be carried out; dehydration should be encouraged by limiting the intake of fluids to 900 cc. per day for the first few days and less for the weeks following; mental and physical rest should be enjoined for three or four weeks, or longer if necessary, and the associated scalp injuries should be dealt with as soon as the shock can be controlled. The author believes that, during the first twenty-four hours after the occurrence of a severe head injury, operation should not be undertaken except in the rare instance when an extradural hematoma increases so rapidly as to endanger life during that period. After the period of shock is passed, operative treatment may be carried out: (1) as the treatment of a compound fracture of the skull, (2) to evacuate a hematoma presenting localizing symptoms, and (3) in severe cases of cerebral contusions, which have resisted dehydration treatment. Some weeks or months following the injury, operation may be advisable: (1) to evacuate a chronic subdural hematoma, (2) for the treatment of chronic localized arachnoidal adhesions, and (3) for the relief of convulsions, or for persistent physical symptoms which have resisted long periods of rest

and dehydration. In patients presenting remote symptoms of head injury, a headache of a general dull discomfort, a localized headache and an intermittent headache of a general bursting character can be recognized.

Practitioner, London

131: 1-116 (July) 1933

Management of the New-Born. Louise McIlroy.—p. 1.
Management and Care of the Premature Infant. R. C. Jewesbury.—p. 9.
Congenital Malformations. D. Browne.—p. 20.
Feeding of the New-Born. B. Myers.—p. 33.
Certain Infections and Disorders to Which the New-Born Are Prone. F. S. Langmead.—p. 47.
Jaundice in the New-Born. A. C. Hampson.—p. 59.
Perurethral Treatment of Enlarged Prostate. F. McG. Loughnane.—p. 71.
*Roentgen-Ray Sterilization for Uterine Hemorrhage: Notes on the After-History of Some Cases. F. Hernaman-Johnson.—p. 83.
Neuralgia. R. V. Bradlaw.—p. 87.
*Two Cases of Bacillus Alcaligenes Infection. W. K. Anderson.—p. 102.

Uterine Hemorrhage.—Hernaman-Johnson states that, in order to destroy that particular function of the ovaries which is responsible for the menstrual cycle, a certain minimal quantity of radiation must be passed through them. The rays from the generating tube must first penetrate the overlying tissues. It has been ascertained that 30 per cent of the amount of x-rays necessary to cause a skin reaction is sufficient to produce the required effect on the ovaries of a woman in her fifth decade of life. With the high voltage roentgen apparatus now available, from 20 to 30 per cent of the energy falling on the skin reaches the ovary in a patient of average size. It is theoretically possible, therefore, to sterilize an ovary with a single dose of penetrating x-rays with only temporary damage to the skin. The author uses two fields for each ovary—anterior and posterior. The amount of radiation falling on the skin is less than half of that required to produce an erythema. The two sides are done on consecutive days, and a month later the treatment is repeated, with slight modifications. The author has used this technic for many years and has never seen the slightest change in the skin, or any constitutional upset.

Bacillus Alcaligenes Infection.—Anderson cites two cases which at first appeared to be severe cases of rheumatic fever with cardiac valvular and myocardial lesions associated with painful and swollen joints but not responding to salicylates; blood cultures were taken and revealed the presence of Bacillus alcaligenes. Unfortunately, the organism was not looked for in the stools in the earlier stages of the infection, though presumably it emanated from there. The acute infections were relieved by mercurochrome. One patient received one tablespoonful of a 1 per cent solution of mercurochrome in water between meals and the other half an ounce of the solution twice a day.

Chinese Medical Journal, Shanghai

47: 545-636 (June) 1933

Pneumococcic Lobar Pneumonia: Clinical Study of Two Hundred and Forty-Two Typed Cases. C.-J. Wu and T.-Y. Ch'iu.—p. 545.
Roentgenologic Diagnosis of Chronic Appendicitis. T. S. Jung and C. K. Hsieh.—p. 560.
Diagnosis of Acute Appendicitis: Study of Ninety-Eight Consecutive Cases. J. K. Shen.—p. 572.
Injection Treatment of Varicose Veins. T. D. Lee.—p. 578.
Immunity in Treponematoses in the Light of Experimental Evidence and Epidemiologic Phenomena. C. M. Hasselmann.—p. 584.
Sickness Records of School Children in Peiping. W.-M. Li.—p. 587.
Sickness: Important Cause of Absenteeism in Rural Schools. C. C. Ch'en.—p. 594.
Investigation on Infant Mortality and Its Causes in Peiping: Report. Marion Yang and I-c. Yuan.—p. 597.
Cost of Various Types of Medical Services at Peiping Health Demonstration Station. C.-Y. Shen.—p. 605.

Japanese Journal of Obstetrics and Gynecology, Kyoto

16: 83-182 (April) 1933

Statistic Investigation of Uterine Myoma. E. Terada.—p. 84.
Instance of Primary Ovarian Cancer with Elephantiasis-Like Appearance Due to Its Cutaneous Metastasis. E. Terada.—p. 110.
Ectopic Chorionepithelioma Malignum Complicated by Pregnancy. E. Terada.—p. 121.
Statistical Study of Menstruation of Japanese Medical Students. J. Kosakai, K. Kawanabe, Y. Kuraishi and A. Yamamura.—p. 141.
Value of Manual Treatment as Rapid Dilation of Cervical Canal. K. Minamikawa.—p. 163.
Instance of Osteogenesis Imperfecta Congenita. Y. Katsu.—p. 171.
Vaginal Secretions and Their Significance to Puerperal Fever. H. Takayama.—p. 175.

Revue Sud-Am. de Méd. et de Chir., Paris

4: 401-480 (June) 1933

Solution of Problem of Feeding in Homes of Poor. P. Escudero.—p. 401.
Tuberculosis of Mammary Gland. P. Moura and D. Guilherme da Costa.—p. 411.
*Headaches Due to Disease of Verumontanum and Prostatic Utricle. A. Valerio.—p. 424.
*Dissociated High Paralysis of Brachial Plexus Following Antiscorpion Serum Therapy. A. C. Pacheco e Silva.—p. 429.

Headaches and Urogenital Disturbances.—Valerio states that chronic refractory headaches in males may originate in urogenital disturbances. He reports four cases in which chronic headache, which had resisted all customary forms of local and general therapy, including surgical and antisyphilitic therapy, yielded to the treatment of existing genital lesions. In the first case the genital lesion was a polyp of the prostatic utricle; in the second, a purulent cyst of the prostatic utricle; in the third, an atrophy of the verumontanum and the prostatic utricle, and in the fourth, a papilloma of the verumontānum and ulceration of several glandular orifices of the prostate. Impairment of the sexual function existed in all cases. Cure of the genital lesion, in two cases by electrocoagulation and in two cases by fulguration, resulted in disappearance of the headaches together with restitution of the normal sexual function.

Paralysis of Brachial Plexus Following Antiscorpion Serum Therapy.—Pacheco e Silva reports the case of a man, aged 30, in whom the antiscorpion serum was injected at the level of the interscapular region on the left side. Two days after the injection, generalized urticaria, headache, vomiting and diarrhea appeared, followed by intense pains in the whole body, particularly in the arms and shoulder. Gradually increasing muscular atrophy ended in inability to raise the left arm and difficulty in raising the right arm above the head. On neurologic examination, a pronounced atrophy of the muscles of the supraspinous and subspinous fossae was found, particularly on the left side. The homolateral deltoid and trapezius muscles and the rhomboid muscles also exhibited marked atrophy. On the right side the atrophy affected the inferior trapezius to a greater degree. The patient was unable to raise the left arm and, when he raised the right arm to shoulder level, he exhibited a winged scapula due to atrophy of the serratus major. The spinal fluid contained 5 leukocytes per cubic millimeter. The absence of sensory disturbances in connection with the affected muscles favors a lesion of the spinal nerve roots rather than of the spinal trunk. The patient had never received serum therapy before the injection that produced the paralysis.

Policlinico, Rome

40: 421-496 (Aug. 15) 1933. Surgical Section

Histologic Modifications and Functional Adaptation of Small Intestine After Colectomy. M. Canavero.—p. 421.
Diagnosis and Treatment of Gastrocolic Fistulas. C. Colucci.—p. 439.
Appendicitis and Intestinal Occlusion. G. Culmone.—p. 447.
Contribution to Hemophilic Arthropathy. G. Gucci.—p. 462.
Calcified Lymphatic Glands Around Gallbladder. R. Memmi.—p. 474.
*New Method of Operative Treatment of Echinococcus Cysts of Lung. P. Valdoni.—p. 484.

Operative Treatment of Echinococcus Cysts of Lung.—Valdoni treated two patients with pleural echinococcus cyst, one with a central suppurating cyst opening into the bronchi and another with two peripheral nonsuppurating cysts. The operative technic consists of extrapleural filling to treat pleural adhesions without opening the pleura, in order to collapse the lung between the cysts and the pleural surface. This collapse, easily attained in nonruptured echinococcosis, reduces the parenchyma between the cysts and the surface of the lung to an atelectatic stratum with closed bronchi and obliterated vessels so as to avoid during the subsequent open operation the danger of aspiration or introduction of air or liquid into the circulation. The author prefers petrolatum to the sponge or iodoform gauze for filling. At least 400 Gm. is used, according to Beer's formula. Local anesthesia is produced by 2 cc. of a 1 per cent solution of procaine hydrochloride. The first operative stage consists of separating the pleura from the thoracic fascia, after which the petrolatum is introduced into the cavity at a temperature of about 38 C. (104 F.). Exact localization is important in order that the filling may correspond to the projection of the cysts on the thoracic wall under

repeated control of roentgenoscopic examination. In the second stage, twenty days later, the incision is reopened and the petrolatum filling is removed, the cyst is aspirated with a needle and syringe, the syringe is replaced by an adapter furnishing diathermic current to the needle which is used as an electric knife to incise the pulmonary tissue for about 1.5 cm., the membrane of the cyst is removed with forceps, cleaning of the cystic cavity is completed with a small tampon and a rubber drain is introduced. The extrapleural filling this time is done with strips of iodoform gauze of sufficient amount to keep the cystic cavity collapsed. The wound is sutured except for a small orifice in the lower angle through which protrude the end of a gauze plug and the drainage tube. After from two to three days the tube is removed. The gauze is removed after a week, when communication with the cavity is already closed. The extrapleural filling is repeated with less gauze and continued until roentgen examination shows the complete disappearance of the cavity or its maximum reduction.

Deutsche medizinische Wochenschrift, Leipzig

59: 1275-1312 (Aug. 18) 1933

Problem of Neurasthenia and Hysteria. K. Schneider.—p. 1275.
Action of Athletic Activity on Circulatory and Respiratory Organs and on Metabolism. H. Rautmann.—p. 1278.
Causal Factors of Cardiac Insufficiency. Marianne Wallenberg.—p. 1280.
*Allergic Manifestations Caused by Stimulants and Their Treatment. M. J. Gutmann.—p. 1281.
Serologic Diagnosis of Syphilis. K. H. Dombrowsky.—p. 1283.
Health and Truth. V. von Weizsäcker.—p. 1284.
Roentgenologic Demonstrability of Smallest Glass Splinters. A. Kahlstorf.—p. 1286.

Allergic Manifestations Caused by Stimulants.—Discussing the allergens in stimulants such as wine, beer, coffee and tobacco, Gutmann states that not the alcohol nor the caffeine but rather other substances contained in the stimulants are the carriers of the allergens. He discusses in detail his studies on beer. Allergic disturbances that have been noted following the drinking of beer are itching, urticaria-like conditions, a feeling of fulness, acidity of the stomach, nausea, diarrhea and colic-like manifestations with severe spasms that sometimes resemble ileus; also migraine, coryza and asthmatic conditions. Since every substance contained in beer may act as an allergen, the offensive factor must be determined. The author describes several test methods that may be employed. In one series of tests he detected a constituent of hops, lupulin, as the allergen, while in other tests he found that yeast was the eliciting factor of severe allergic intestinal spasms. For the prevention of allergic disturbances the author suggests that, if the patient does not want to abstain from beer entirely, it should be determined which beer he tolerates and which not, for some allergic patients are sensitive only to certain beers. He points out that alcohol sometimes exacerbates the allergic condition and that it would be advisable to recommend to allergic patients an alcohol-free beer, which moreover has the advantage that it is not made with yeast and therefore could be recommended to those persons who have a hypersusceptibility to yeast.

Deutsches Archiv für klinische Medizin, Berlin

175: 385-504 (Aug. 4) 1933

Elimination of Urinary Pigments and Renal Function. R. Enger and P. Preuschoff.—p. 385.
Electrocardiograms of Coronary Thrombosis. J. von Boros and J. von Fernbach.—p. 442.
*New Hereditary Blood Disease: Constitutional Thrombopathy. E. A. von Willebrand and R. Jürgens.—p. 453.
Nycturia. A. Jores.—p. 484.

Constitutional Thrombopathy.—Bleeding disease without thrombopenia was observed by von Willebrand in a group of families in Finland, and the studies on the members of these families, carried on by him and by Jürgens, are reported in detail. The disturbance, designated as constitutional thrombopathy, is familial and hereditary, and the genealogical trees indicate that it is transmitted by the dominant gene. It seems that the dominance can sometimes be suppressed, but whether the gene is found in an autosome or in an accessory chromosome has not been determined. The latter assumption is supported by the occurrence of two types of bleeders among the women and of only one type among the men, and also by the fact that the greater number of diseased women were detected in the two consanguineous marriages. However, the fact that a healthy father had a son who was a bleeder, and the records of another family contradict this hypothesis. Occasionally the disorder becomes manifest during the nursling age, while in other families it does not become evident until the period of puberty, and in later life, particularly after the climateric, the bleeding tendency frequently decreases again. Both sexes are subject to the disturbance, but in women it is generally more severe than in men. The hemorrhages may occur in the skin or in the mucous membranes, the site of predilection being the nose, but hemorrhages from the gums are also comparatively frequent and even the female genitalia, the gastro-intestinal tract and the urinary tract may become involved, and there is prolonged bleeding after injuries. The majority of the patients are of the asthenic type and appear nervous. Inbreeding seems to play an important part in the pathogenesis. The white and red blood pictures reveal no essential changes. The number and shape of the blood platelets are normal, but there is an increase in giant platelets. The agglutination of the platelets is retarded. The "thrombosis time," determined in the capillary thrombometer, is prolonged, but coagulation and retraction are normal. The bleeding time is greatly prolonged, which is considered especially characteristic for constitutional thrombopathy. The vascular factor is of minor importance. The treatment is mostly symptomatic and follows largely the general rules that govern the therapy of hemorrhagic diatheses. In severe cases, blood transfusion is resorted to.

Klinische Wochenschrift, Berlin

12: 1273-1312 (Aug. 19) 1933. Partial Index

Disturbances in Lipoid Metabolism in Hereditary Diseases of Nervous System. W. Spielmeyer.—p. 1273.
Light Permeability and Metabolism of Active Muscle. E. von Baeyer.—p. 1278.
Adsorption, Elution and Adsorptive Separation of Haptens. H. Rudy.—p. 1279.
*Serologic Diagnosis of Tuberculosis. A. Beck and O. Schedtler.—p. 1280.
*Chronic Intermittent Gastric Volvulus. Berta Aschner.—p. 1283.
Iodine Metabolism in Diseases of Thyroid. L. Scheffer.—p. 1285.
Bronchial Asthma and Influenza. K. Hajós.—p. 1287.

Serologic Diagnosis of Tuberculosis.—Favorable results obtained by others with the complement fixation test that uses the antigen of Witebsky, Klingenstein and Kuhn induced Beck and Schedtler to employ this test and, in order to check the results of the complement fixation test by a simple seroreaction, they performed the precipitation test of Lehmann-Facius-Loeschke. They made these tests on 151 patients with tuberculosis and in 209 control cases. They state that the complement fixation test with the antigen of Witebsky-Klingenstein-Kuhn gives satisfactory results as regards the specificity and the constancy of its outcome. With 70.2 per cent of positive reactions in patients with pulmonary tuberculosis and with 35.5 per cent of positive reactions in extrapulmonary tuberculosis, the inclusiveness obtained by the authors was somewhat less than that reported by other investigators. No definite conclusions have been reached as yet about the prognostic significance of the test. The precipitation reaction according to Lehmann-Facius-Loeschke gave a higher percentage of positive results than did the complement fixation test in pulmonary as well as in extrapulmonary tuberculosis, but in specificity it was not equal to the complement fixation test. The authors recommend that both tests should be further investigated on a large scale.

Chronic Intermittent Gastric Volvulus. — Aschner describes the history of a girl who asked medical advice on account of dyspeptic disturbances. After eating, she had a feeling of tension in the epigastrium and there were frequent eructations; she also had poor appetite and was troubled with constipation. The family history disclosed that the father and two brothers of the girl had intestinal ulcers. Examination of the gastric contents did not favor an ulcer but made an anacid gastritis more probable. The roentgen examination revealed a partial volvulus of the stomach. A roentgenoscopy three weeks later showed that the gastric volvulus had disappeared. Later the disturbances reappeared after intervals of several weeks or months, which indicates that the volvulus was of the chronic intermittent type. The symptoms being comparatively mild, there was no necessity for an operation. In this case congenital anomalies were the cause and were evidenced by congenital

abnormalities in the mesogastrium and particularly by an abnormal length of the hepatoduodenal ligament. The author considers these mesenteric anomalies the necessary predisposition for the development of idiopathic gastric volvulus. She states that, in some instances, it may be possible to assume the existence of a chronic intermittent volvulus of the stomach before the roentgenologic examination.

Medizinische Klinik, Berlin

29: 1131-1162 (Aug. 18) 1933

Procedure of Examination for Syphilis During Consultation. W. Schönfeld.—p. 1131.
Retraction Nystagmus. E. Gamper and J. Kubik.—p. 1134.
*Nutritional Disturbances Following Gastric Resection. H. Dibold.—p. 1138.
Heart Beat. S. Kirković.—p. 1143.
*Borderline Ray Therapy (According to Bucky) in Internal Diseases. E. Last.—p. 1145.
Human Double Monster. Fink and Winter.—p. 1146.
Vitamin A and Visual Purple. F. Haurowitz.—p. 1148.
Experimental Proofs for Dependence of Metabolic Condition from Nutrition. H. Langecker.—p. 1149.

Nutritional Disturbances Following Gastric Resection.—In nutritional disturbances that developed several months after gastric resection (Billroth II), Dibold observed various changes in the remaining stomach, the small intestine, the large intestine and the pancreas. Discussing the diagnosis of these changes, he points out that the anamnesis, the clinical aspects, and examination of the blood, the gastric juice, the urine and the stool frequently allowed an exact anatomic and functional diagnosis to be made, especially if all the changes were considered together. Roentgenologic examination was also necessary in some cases, but the clinical observation could never be replaced by roentgen examination, because even in cases presenting large anatomic changes clinical observation was necessary for the interpretation of the roentgen picture. The author calls attention to the hypoglycemic attacks that may develop in persons who have undergone resection of the stomach, following administration of carbohydrates, after injection of insulin (even of comparatively small quantities) and after simultaneous administration of carbohydrates and insulin. Hypoglycemic attacks, as observed in these patients, are exhibited with the same severity only in diabetic patients with hypersusceptibility to insulin. The author emphasizes that the possibility of hypoglycemic changes after gastric resection should be kept in mind, since, if this condition is overlooked, valuable time may be lost for treatment. The dietary treatments for the various conditions are described and evaluated.

Borderline Ray Therapy in Internal Diseases.—Bucky's borderline rays were employed by Last in the treatment of various internal disorders, particularly those of a functional nature. He points out that, since the skin has been found important for a number of vital functions, the general therapy by means of borderline rays, that is, the therapeutic action of rays through the skin, can no longer be questioned. His report is based on observations made in the course of several years. He found the borderline rays helpful particularly in menopausal disturbances. Of 174 cases, only 5.2 per cent were not favorably influenced. However, it appears that the efficacy of these rays in menopausal disorders is dependent on the presence of remnants of ovarian activity, because in the menopausal disturbances developing after the surgical removal of both ovaries the general therapy with borderline rays produced only temporary improvement. The author tried this therapy also in some forms of hyperthyroidism and noted a considerable reduction in the basal metabolic rates. In disturbances of the sympathetic nervous system, especially those of convalescence after influenza, this general therapy was found to counteract the predominating vasomotor disorders and the weakening sweats. It proved effective in eight out of twenty patients with nervous bronchial asthma, and the vasoneurotic component of anginous attacks likewise yielded to this treatment. The author also obtained favorable results with the borderline ray treatment of gastric and duodenal ulcer, already recommended by Bucky. The aim was of course only to counteract the pains by reducing the spastic condition of the gastric muscles, as the healing of the anatomic lesion could hardly be expected from the irradiation. The author hopes that the favorable results obtained by him will stimulate further work with this form of ray therapy.

Monatsschrift f. Geburtshülfe u. Gynäkologie, Berlin

95: 1-128 (Aug.) 1933

Constitutional Differences in Hungarian and German Women with Especial Consideration of Injuries of Soft Parts During Delivery. Z. von Szathmáry.—p. 1.
Histology of Ovary in Menstrual Anomalies. H. Hauptmann.—p. 13.
*Simplification of Zondek-Aschheim Reaction and Its Practical Value. A. M. Agaronow.—p. 20.
Manual Detachment of Placenta. W. Ssolowjew.—p. 34.
Etiology of Puerperal Fever. Luise-Lotte Horn.—p. 43.
Spondylolisthesis of Traumatic Origin. E. Gajzágó.—p. 54.
Significance of Chills for Prognosis of Puerperal Fever. J. Batisweiler.—p. 56.
Case of Calcified Myoma During Pregnancy, Delivery and Puerperium. K. Fuge.—p. 66.
Experimental Investigations on Amniogenic Pathogenesis of Malformations. H. Hellner.—p. 70.
Hemorrhages of Corpus Uteri During Senility. W. Schultz.—p. 76.
Primary Bilateral Tubal Carcinoma. L. Danckwardt.—p. 84.
Question of Carcinoma of Stump. K. Haun.—p. 91.

Simplification of Aschheim-Zondek Reaction.—Agaronow says that the original method of Zondek-Aschheim has the disadvantage of employing only female white mice, a factor that makes it necessary to keep large numbers of mice, for the females used in the test are withdrawn from procreation. The author employed the modification recommended by Brouha, Hinglais and Simmonet, who use male instead of female mice. One of two male mice of the same litter and of the same weight is given, for five or six successive days, injections of from 0.5 to 1 cc. of the urine that is to be tested. The second male mouse serves as control. Both mice are killed twenty-four hours after the first has received the last injection. The weights of the accessory sex glands and of the glans penis are then compared. The accessory sex glands located immediately behind the urinary bladder become considerably enlarged under the influence of urine from a pregnant woman. The increase in the size and weight of the glans penis is not so reliable an indicator, for its size shows normally considerable fluctuations, and consequently the author gives more attention to the changes in the accessory sex glands. He tested the urine of sixty-five persons, most of them (thirty-seven) pregnant women, while the others had amenorrhea, fibromyoma, prolapse of the uterus, adnexitis, ovarian cysts, or cancer of the uterus, and two of the persons were men. Positive reactions were obtained only in the case of pregnant women and of patients with cancer of the uterus. Thus the results are just as reliable as those obtained with the original method. However, certain gradations that can be detected with the original Aschheim-Zondek test are not possible with the simplified procedure, and the original method still retains its significance for research; but, for routine pregnancy tests, the author considers the modification more practical and more economical.

Münchener medizinische Wochenschrift, Munich

80: 1237-1274 (Aug. 11) 1933

Irrigation of Stomach in Gastric Surgery. A. Krecke.—p. 1237.
*Submammary Temperature as Criterion of Lactation Capacity. M. Zelić and Z. Djokić.—p. 1238.
Backache Caused by Loosening of Sacro-Iliac Joints. K. Bragard.—p. 1240.
Insulin Allergy and Its Influence on Metabolic Condition in Diabetes. F. Kraupl.—p. 1246.
Treatment of Rheumatic Adhesive Pericarditis. H. W. Pässler.—p. 1247.
Tearing of Uterus by External Force in Advanced Pregnancy. F. Orthner.—p. 1248.
*Histamine Treatment of Painful Muscular and Articular Disturbances. A. Faber.—p. 1249.
Experiences with Tar-Sulphur Powder in Treatment of Cutaneous Diseases. H. Säuferlin.—p. 1250.
Air Pressure Bandage for Fractures of Clavicula. H. Niessen.—p. 1251.
Estimated Figure of Mental Defectives in Germany. H. Strecker.—p. 1254.

Submammary Temperature.—Zelić and Djokić call attention to the fact that a normally lactating breast has a higher temperature than mammary glands with a deficient secretory function, and they cite other observers who have noted this. The submammary temperature is estimated in comparing it with the axillary and the rectal or sublingual. The authors performed such tests on nonpregnant, pregnant and lactating women and found that during the first half of the period of pregnancy the submammary temperature is the same as or somewhat lower than the axillary but that during the second half it is higher than the axillary temperature and approaches

the rectal or the sublingual. During the puerperium and during lactation, monothermia develops; that is, the submammary and the rectal or sublingual temperatures become equalized. It was also noted that the act of nursing does not cause changes in the submammary temperature. If the two breasts are of the same development, their temperature either is the same or differs only slightly. The authors think that measuring of the temperature of the mammary glands is the simplest method for the determination of the functional capacity of the mammary glands. The nearer the submammary temperature comes to the rectal or to the sublingual, the more favorable are the prospects for the lactating capacity. If at the beginning of lactation the submammary temperature is higher than the axillary and approaches the rectal or the sublingual, the mother should be encouraged to nurse her child although the milk supply may at first seem too small. In many of these cases the hypogalactia is the result of insufficient evacuation of the mammary glands, and the mother should be told to see to it that the breasts are completely emptied. However, in cases in which the rectal or the sublingual temperatures are constantly considerably higher (more than 1 degree C., or 1.8 degrees F.) than the submammary temperature, the lactating activity is slight, and even artificial evacuation of the breasts does not stimulate lactation in these cases. But if the submammary temperature has a tendency to increase so as to become nearly equal to the rectal temperature, the lactation process has a favorable prognosis.

Histamine Treatment of Muscular and Articular Disturbances.—Faber employed histamine treatment in acute and chronic myalgias, sciatic neuralgias, acute and chronic arthralgias, and posttraumatic or postoperative local circulatory disturbances. In painful conditions limited to a small area, he employed Deutsch's original method of histamine therapy; that is, he gave intracutaneous injections of from 0.1 to 0.3 cc. of a 1:1,000 solution of histamine. In order to increase the efficacy of these intracutaneous injections, the author applied a galvanic current of from 4 to 7 milliamperes for about five minutes. Of the twenty-two patients treated in this manner, eighteen were entirely free from complaints after the first treatment and two others were considerably improved. However, he emphasizes that the treatment is suitable only for cases in which the painfulness is limited to a small area. The majority of his patients were treated with a histamine ointment. At first the application of the ointment was combined with iontophoresis, but later he resorted to iontophoresis only in those cases in which scarification was contraindicated, his usual method then consisting of inunction following scarification with a wheal needle or Ponndorf's scarifier. He asserts that this simple method gave the best results. The treatment was generally well tolerated, and the author considers neurasthenia with vasolability and allergy the only contraindications. He states that the results of histamine treatment were not convincing in chronic arthropathies and in sciatic disturbances, but that in acute and chronic myalgias, acute arthralgias, periostalgias and postoperative and posttraumatic circulatory disturbances of the extremities he obtained excellent results.

Zentralblatt für Gynäkologie, Leipzig

57: 1921-1984 (Aug. 19) 1933

Greatest Efficiency of Colposcopic Diagnosis of Carcinoma. H. Hinselmann.—p. 1922.
Spontaneous Rupture of Pregnant Uterus. G. Hromada.—p. 1926.
Etiology of Ectopic Pregnancy. L. Kraul.—p. 1928.
Normal Pregnancy Following Bilateral Removal of Uterine Tubes. N. P. Werhatzky.—p. 1931.
*My Curative Method for Puerperal Sepsis with Local Intraparenchymal Vaccination. F. Spirito.—p. 1933.
*Changing Character of Successive Metastases in Myosarcoma of Uterus. N. Christophorakos.—p. 1935.
*Treatment of Inoperable Prolapse. A. L. Scherbak.—p. 1940.

Intraparenchymal Vaccination in Puerperal Sepsis.—Spirito employs a polyvalent vaccine containing streptococci, staphylococci, gonococci and colon bacilli. He makes the injection by means of a Pravaz syringe, which enables him to introduce the vaccine deep into the soft parenchyma of the vaginal part of the cervix. The injection is repeated every third day, and the single dose is usually one-third cubic centimeter. Each injection is followed by a general reaction, characterized by an increase in temperature. The intensity of the reactions decreases in the successive injections, and the treatment is continued until there is no longer a reaction. According to the degree of the reaction following the first injection, the doses of the subsequent injections either remain the same or are somewhat increased. The author emphasizes that the results of the treatment are the more favorable the earlier the treatment is begun. The author states that the vaccine injected into the uterus is more effective than the intramuscularly administered vaccine because it enters the organism by the same route as did the pathogenic organisms and thus finds more favorable conditions for its entry and absorption.

Changing Character of Metastases in Myosarcoma.—Christophorakos relates the history of a woman, aged 58, in whom the uterus and the adnexa were removed on account of uterine hemorrhages and of myoma. The microscopic examination of the specimen revealed myofibroma with areas of deficient maturity, and sarcoma was suspected. In the course of eighteen months a large tumor developed in the lower part of the abdomen. The histologic examination of the extirpated tumor disclosed an edematous fibroma, and there were no indications of malignant degeneration. Ten months later a new operation became necessary because a tumor of the size of two fists had developed. This one proved to be a fibromyoma, and again there were no signs of malignant degeneration. Six months after this intervention a fourth operation became necessary, and this time the examination disclosed a polymorphocellular sarcoma that in some portions showed the structure of a fibromyoma. New metastases and cachexia followed this intervention and the patient died two years later. The unique character of this case, in which the removal of a sarcoma was followed by two relapses of benign character and in which only the third relapse showed a reversion to malignity, was the reason for reporting this case.

Treatment of Inoperable Prolapse.—Scherbak admits that the operative treatment of prolapse of the genitalia is the most effective but points out that there are some patients who decline a surgical intervention or are unsuitable for such treatment, and in these pessary treatment has to be resorted to. He shows that he obtained good results with a modification of Rosenfeld's funnel pessary or of Menge's pessary. He observed that these funnel pessaries function properly only if the total height of the pessary is at least from 1 to 1.5 cm. greater than the diameter of the cup portion, so that the end of the stem protrudes a little from the vaginal opening. He explains the mechanism of action of this pessary and states that at present it is giving good results in the treatment of twelve women between the ages of 60 and 85, who for various reasons could not be operated on, and that all feel greatly relieved.

Novyy Khirurgicheskiy Arkhiv, Dnepropetrovsk

28: 1-144 (No. 109) 1933

Nature of Morbid Symptom Complexes in Trauma of Nerve Trunks. M. S. Skoblo.—p. 19.
Local Anesthesia in Fractures. B. A. Petrov.—p. 33.
Treatment of Malignant Conditions of Tonsils. A. O. Vereshchinskiy.—p. 44.
Surgery of Tumors of Spinal Cord. P. S. Rabitskiy.—p. 54.
In Defense of Muscle Sign of Volkovich. B. B. Beyzman.—p. 75.
Plastics in Pathology and in Clinical Conditions. G. A. Berdichevskiy.—p. 78.
Universal Rheostat for Feeding of Low Voltage Medical Apparatus. M. A. Derzhavets.—p. 88.
Stomach Perforation in Paracentesis of the Abdomen for Ascites. A. A. Somov.—p. 91.
Diagnostic Errors in Abdominal Tumors. A. S. Egorov.—p. 93.
Horseshoe Kidney and Heminephrectomy for Tuberculosis of One Half. D. O. Alshtein.—p. 94.
*Heyle's Operation for Hydrocephalus. I. E. Kartava.—p. 96.

Heyle's Operation for Hydrocephalus.—Kartava calls attention to the fact that attempts at surgical treatment of hydrocephalus have been unsuccessful thus far. He performed the Heyle operation, which consists of an anastomosis of the dura mater to the ureter, in a patient aged 16 months. Cerebrospinal puncture established it to be an instance of a communicating hydrocephalus. The head was unusually large, presenting a circumference of 91 cm. A one stage operation was carried out under ether anesthesia. The left kidney was removed and the ureter was dissected out for a distance of about 6 cm. Next, a laminectomy involving the third and fourth lumbar vertebrae was performed. The freed ureter was placed in a muscular tunnel made by a longitudinal sectioning of the long muscles

of the spine. The pelvis of the kidney was sutured to the dura mater, the latter incised, and an anastomosis between the two carried out. The immediate postoperative course was distinguished by an almost continuous micturition and a marked improvement in all the symptoms. On the fourteenth day the circumference of the head diminished by 13 cm. The child died rather suddenly on the eighteenth day of a cause that could not be ascertained. The author concludes on the basis of his own and twelve other cases in the Russian literature that the operation proposed by Heyle in 1925 accomplishes an effective drainage of the ventricles, that the patients tolerate the operation quite well, and that the immediate results are quite gratifying.

Sovetskaya Khirurgiya, Moscow

4: 357-500 (No. 3-4) 1933. Partial Index

Prophylaxis of Suppuration by Means of Surgical Treatment of Wounds. N. D. Florinskiy.—p. 359.
Early Diagnosis of Malignant Tumors of Kidney. P. M. Fronshteyn.—p. 363.
*Traumatic Injury to Kidney. M. G. Kupershlyak.—p. 367.
Elephantiasis of External Genitalia and Its Operative Treatment. V. I. Sapozhnikov.—p. 376.
Appendiceal Stump After Appendectomy. L. M. Nisnevich and A. S. Rovnov.—p. 397.
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Fractures of First Metacarpal Bone and Its Treatment. B. P. Divnogorskiy and I. N. Rybushkin.—p. 464.
*Bilateral Inguinal Hernia with Unusual Contents: Case. A. A. Busalov.—p. 478.

Traumatic Injury to Kidney.—Kupershlyak states that traumatic injuries of the kidneys are rather common and occur more frequently as a result of traffic accidents than in the course of industrial occupations. Intrapelvic tension is not of great moment, since under normal conditions the renal pelvis is not distended. The twelfth rib is the most important immediate traumatizing factor. Trauma to renal tissue is to be considered as one of the many causes of inflammatory and obstructive lesions as well as of urolithiasis. The treatment of renal trauma should be conservative. Operative intervention is indicated only in the presence of grave symptoms. Its aim, however, is to preserve renal tissue as far as is possible. Small tears are to be sutured; tearing off of a pole is treated by a wedge-shaped resection and suture. Nephrectomy is justified only when these operations cannot be carried out.

Bilateral Inguinal Hernia with Unusual Contents.—Busalov's patient was a woman, aged 36, presenting a bilateral inguinal hernia. She had a well developed body, fully developed breasts and a typical female pelvis, but no growth of pubic hair. The large as well as the minor pudic lips were poorly developed, but the clitoris was well developed. On vaginal examination, no evidence of cervix, uterus or adnexa was found. The vagina ended in a blind sac. At operation the exposed right inguinal hernial sac contained a structure which was identified as a rudimentary uterine horn. Adherent to its lateral celiac aspect was a structure which on inspection resembled a testicle. From the opposite lateral surface of the horn ran what appeared to be the broad ligament containing the round ligament. The latter pierced the hernial sac and ended in the tissues of the labium majus. On the supposition that a state of true hermaphrodism existed here, the author removed the testicle with the uterine horn. Exposure of the left inguinal canal revealed an identical picture: the hernial sac likewise contained a uterine horn with a sexual gland attached to it. The latter was separated from the horn and replaced on its pedicle into the peritoneal cavity. The horn was resected. Histologic study of the sex gland removed from the right side proved it to be a testicle. The author concludes that the case is an instance of bilateral hermaphrodism, an anomaly of inclusion of male sexual glands in a female subject. The hormone products of these glands were apparently neutralized to a considerable extent by the activity of the patient's female hormone system. The absence of a normal uterus is explained on the basis of failure of development of the müllerian ducts. These were completed in their caudal end, but the proximal ends failed to unite, each giving rise to a uterine horn. The incomplete short round ligament pulled the uterine horns to the inguinal region. The effect of constant pull of the elastic muscle fibers on the lateral fossa resulted in the formation of a hernia. The author could not find a similar case in the literature available to him.

Hospitalstidende, Copenhagen

76: 793-804 (July 20) 1933

*Aseptic Traumatic Meningitis. O. Bouet.—p. 793.

Aseptic Traumatic Meningitis.—In Bouet's three cases, in children aged respectively 2, 6 and 14 years, symptoms of meningitis set in from twenty-four to forty-eight hours after trauma of the head. The spinal fluid showed mainly polymorphonuclear leukocytes in two cases, monocytes in one, and bacteria in none. There was increase in the pressure of the fluid. Repeated lumbar puncture was followed by abatement of the symptoms and recovery. Cases of benign meningitis after trauma of the head are cited from the literature.

76: 805-816 (July 27) 1933

*Electrocoagulation in Hypertrophy of Prostate. E. Groth-Petersen.—p. 805.

Electrocoagulation in Hypertrophy of Prostate.—Groth-Petersen says that improvement in the results of treatment of prostatic hypertrophy depends mainly on more prostatectomies in the favorable stage and reduction of the operative mortality by strict selection of operable cases. The stricter this choice, the greater the number of patients referred for palliative treatment. For these patients endo-urethral electrocoagulation seems to be of great value and preferable to cystostomy or catheter life. The treatment is well borne and the immediate results show clinical recovery in a large number of cases. Little is as yet known as to the permanence of recovery.

76: 829-840 (Aug. 10) 1933

Peculiar Case of Fracture of Jaw. M. Melchior.—p. 829.
*Recurring, Histologically Benign Tumor of Breast: Case. E. Husted.—p. 835.

Recurring, Histologically Benign Tumor of Breast.—The tumor in Husted's case, which appeared as a typical fibroadenoma, recurred the first time as a fibro-adenoma, the second time as a fibroma, and the third time as a fibroma or possibly a fibrosarcoma. There were no metastases. Following excision of the last tumor, roentgen treatment was given; examination eleven months after the end of the treatment showed no recurrence or metastases.

Hygiea, Stockholm

95: 545-608 (Aug. 15) 1933

*Epidemiology and Etiology of Inguinal Lymphogranuloma. S. Hellerström and E. Wassén.—p. 545.

Inguinal Lymphogranuloma.—Hellerström's discussion of the epidemiology of this disease is based on the literature and on answers to questionnaires in 1,636 cases of inguinal lymphogranuloma and 215 of esthiomene. From his review of recent experimental observations on the etiology of inguinal lymphogranuloma, Wassén concludes that it is an infectious disease of distinct entity, which is practically 100 per cent transferable to monkeys and to which even mice are susceptible. The susceptibility of guinea-pigs to the infection has not been established. The virus, of marked lymphotropic nature, is in all probability invisible and filtrable. The virus can be demonstrated in the regionary lymph nodes in man shortly after infection and under certain conditions may be found after several years.

Ugeskrift for Læger, Copenhagen

95: 879-894 (Aug. 17) 1933

*Undulant Fever and Beginning Pulmonary Tuberculosis. A. Frøik.—p. 879.
Disease of the Ear in Infection with Bang's Bacillus. H. Videbech.—p. 884.
Supravital Staining in Solution of Salt with Constant *p*u of 6.6. M. Olesen and O. Thomsen.—p. 886.
New Vein Cannula for Permanent Intravenous Infusion. K. K. Ortmann.—p. 887.

Undulant Fever and Beginning Pulmonary Tuberculosis.—Frøik reports fifteen cases referred for sanatorium treatment or for special examination for pulmonary tuberculosis, in thirteen of which undulant fever was established. He says that, while there is marked similarity in the symptomatology of undulant fever and of beginning tuberculosis, the roentgenogram of the lungs and the bacillary observations, and usually also the stethoscopic results, are negative in undulant fever, in the diagnosis of which the patient's history also is of importance.